

### **3.0 WATERSHED ACTIVITIES**

As described above, we have three levels of watershed management: 1) San Francisco Bay regionwide 2) county watersheds; and 3) subwatersheds. Watershed-based activities implemented on a regionwide basis are discussed above in the Section II *Regionwide Activities* of this document. Activities associated with county watershed management areas and subwatersheds are discussed below. The descriptions include a discussion of issues pertinent to allocation and use of staff resources.

#### **3.1 COUNTY WATERSHED ACTIVITIES**

We are committed to implement all of our surface water related programs on a watershed basis. However, given the current work demands within each county watershed, our experience is that current staffing levels are barely adequate to implement “baseline” watershed planning activities. Therefore, based on our priorities, we have worked to redirect our staff resources within and between subwatersheds. Our ultimate goal is to participate in development of watershed management plans for each county watershed management area.

##### ***Baseline Watershed Activities***

Watershed Management Division staff working within each of the county watershed management areas are responsible for core regulatory programs (water quality certifications, stormwater NPDES, non-chapter 15 Waste Discharge Requirements) and nonpoint source programs. In addition, staff oversee 319(h) grants, provide technical guidance on specific watershed projects, and conduct public outreach and education efforts. As we gain experience in watershed management, we are continually evaluating ways to be more efficient. For example, we intend to evaluate the increased use of general permits, where appropriate. We will also seek opportunities to coordinate permit reissuance on a watershed basis.

As we continue to work on our internal priority setting process, our goal will be to develop watershed workplans in cooperation with local stakeholders. For now, we have developed strategies that describe the watershed, significant issues, and specific work tasks. The strategies are based on priorities identified by Board staff in each watershed management area. In subsequent years, we hope to have increasing involvement from stakeholders in our priority setting process.

The following sections describe each watershed area, summarize significant issues, and provide a plan for the next two years. Each section includes a regional map, based on the 1995 Basin Plan watershed boundaries, which includes the major watersheds and subwatersheds discussed in the county section.

The county watershed management area plans include outputs for:

- Major and minor municipal NPDES permits;
- Municipal stormwater NPDES permits;
- Water quality certifications;
- Pretreatment program;

- Waste Discharge Requirements (non-Chapter 15);
- Nonpoint source management;
- Outreach and education;
- Watershed management projects;
- Reclamation (water recycling or water reuse);
- Contract management (104(b), 205(j), 319(h), Prop 13 grants, etc.); and
- TMDLs

### **3.2 ALAMEDA WATERSHED MANAGEMENT AREA**

Bordering the east bay shoreline of San Francisco Bay, Alameda County encompasses 738 square miles of land and has a total population of approximately 1.5 million. Highly urbanized in the western portion, eastern Alameda County still has considerable agricultural and open space lands (although substantial land development is predicted during the next 10 years). The County has 500,000 acres of rangeland and grazeable woodlands. Elevations range from sea level along the 36 miles of bay shoreline to 3,817 feet in the Diablo Mountain Range south of Livermore. The County is approximately 32 miles long in a north-south direction and 45 miles wide (Figure 3-1).

The county is a diverse combination of land types and forms: the western portion contains an urban corridor running between Berkeley and Fremont with a narrow fringe of marshlands along the Bay and considerable open space in the East Bay Hills. The eastern portion of the county varies from gently rolling terraces and alluvial plains to the steep V-shaped upland areas. The population is concentrated in the highly urbanized Bay Plain along the Bay and suburban sprawl east of the East Bay Hills.

Northern Alameda County imports its drinking water from Sierra Nevada sources serviced by the East Bay Municipal Utility District. There are five major reservoirs in the County, three of which are located in the Alameda Creek watershed. Southern and eastern Alameda County also relies on groundwater basins to augment surface water supplies.

Several creeks in Alameda County are considered impaired as a result of the potential for diazinon discharges to adversely affect aquatic life. Diazinon is a broad-spectrum organophosphate pesticide used for agricultural pest control, structural pest control, landscape maintenance, and other home and garden applications. Runoff from urban areas contains diazinon at levels potentially harmful to some aquatic organisms. Alameda Creek, Arroyo de la Laguna, Arroyo del Valle, Arroyo Hondo, San Leandro Creek, and San Lorenzo Creek have been named specifically because substantial parts of their watersheds include developed urban areas and because they support beneficial uses related to freshwater aquatic habitat. Diazinon may also be of concern in other Alameda County creeks, particularly if they pass through urban areas and support aquatic life. The Regional Board is developing a diazinon Total Maximum Daily Load (TMDL) that will address pesticide toxicity in Bay Area urban creeks. Through this process, it will investigate the extent of the problem, identify diazinon sources, allocate diazinon loads among the sources, and implement control measures.

Lake Merritt is considered impaired as a result of floating material and organic enrichment (low dissolved oxygen). In addition, Alameda County storm water and wastewater contribute to impairment of San Francisco Bay, and the Regional Board is developing TMDLs to address water quality problems in the Bay, such as mercury, copper, and polychlorinated biphenyls (PCBs).

Some of the major creeks, which are receiving attention from local community groups include: Alameda (remnant steelhead population), Sausal, Glen Echo, Seminary, Codornices, Arroyo Viejo, San Leandro, San Lorenzo, and Temescal Creeks. In addition, the largest constructed

marsh in the Region, Hayward Marsh, and Harbor Bay Island, a constructed lagoon, are located in Alameda County.

Alameda Creek is a significant water body in the East Bay as its watershed spans three counties: Alameda, Contra Costa and Santa Clara, and it makes up more than half of the entire East Bay watershed area. To the west, its tributaries drain from the Coast Range, to the east from the foothills of Mt. Hamilton. The creek flows recharges the Niles Cone groundwater basin before emptying into San Francisco Bay. Biologically, it is one of the most significant watersheds in the region, due to the great diversity of species found there, and because it harbors one of the few remaining remnant steelhead populations in the East Bay. Concerns about aquatic habitat in this watershed include fragmentation caused by urbanization, herbicide and pesticide use, stream habitat degradation caused by excessive cattle grazing and associated soil erosion, direct livestock impacts to stream corridors through bank scarring and collapse from animal passage, similar impacts from wild pigs, and stream obstructions. A stakeholder group of livestock and rangeland managers has formed to begin to address these issues in the entire Alameda Creek watershed.

Several efforts are underway in the Alameda Creek watershed to remove barriers to steelhead migration. The Alameda County Public Works Agency received funding from U.S. Army Corps of Engineers to construct a fish ladder past the primary barrier to anadromous fish migration on Alameda Creek. This fish ladder will consist of a large concrete railway bridge support structure in Fremont. The Alameda Creek Alliance, a local citizens' group, actively supports this proposal. Some progress is occurring on lands controlled by the East Bay Park District and the City and County of San Francisco.

Flows in the upper reaches of the Alameda Creek watershed are controlled by water releases from the Calaveras Reservoir, which is managed by the City and County of San Francisco. The Calaveras Reservoir captures natural runoff and stores imported water from the Hetch Hetchy reservoir. Issues in this reach include soil erosion, yellow star thistle, pathogens and nutrients from cattle grazing. The intermediate area of the watershed is controlled by the Zone 7 Water district, which harvests the local runoff. Supplies for public and wildlife use come from the State Water Project. Issues in this reach include sedimentation and erosion. The Alameda County Water District manages the lower reaches of the watershed. Water from Alameda Creek is used for groundwater recharge in the Niles Cone groundwater basin. Issues in this reach include equine facilities that are located near creeks, increasing vineyard development, and pollution threats to groundwater recharge areas from upstream activities.

Water recycling and reclamation are important issues discussed in the Alameda Creek Watershed Management Initiative. The local grape growers, agriculture, and new development are examining the use of recycled water for irrigation. In addition, wastewater dischargers promote water recycling. Local water purveyors have been discussing groundwater injection of highly treated (reverse osmosis) recycled water for drinking. Wastewater discharges include two deep-water outfalls into Central San Francisco Bay (East Bay Municipal Utilities District, East Bay Dischargers Authority and Livermore Amador Valley Water Management Agency). A portion of the Union Sanitary District discharge is reclaimed into the Hayward Marsh.

The Alameda Countywide Stormwater Program began in 1987 and uses a watershed approach to stormwater pollution problems in the county. It is an effort of the fourteen cities in Alameda County, and the County working together under a Municipal NPDES Stormwater Permit. This program incorporates the key program elements of industrial inspection and illicit discharge control, public participation and public outreach, municipal maintenance enhancement, and new development stormwater pollution controls. This program, working closely with Alameda County Public Works Agency staff and Board staff, has taken an innovative, leadership approach to solving many difficult problems. While much remains to be accomplished on the path to clean stormwater runoff, this program has demonstrated that a great deal can be done with a reasonable resource commitment. It has been successfully coordinating a watershed management approach, including regulatory compliance amongst all municipalities.

### ***Significant Issues***

#### **Urban runoff**

- Stream and wetland impacts from new development
- Water quality impairment from pesticide runoff
- Water quality impacts from industrial and commercial site development
- Stream and Wetland Habitat Protection
- Wetland and stream alterations in hillside and bay-adjacent development
- Modification to creeks for flood-control maintenance

#### **Impacts from pollutants**

- Degradation of groundwater quality in Livermore Valley from salt loading
- Impacts in Upper Alameda, Arroyo Laguna and San Lorenzo Creeks from cattle grazing and rangeland management
- Water quality impacts associated with Dublin/Livermore reclaimed water projects
- Unknown impacts from large number of unpermitted utility, construction, and other temporary discharges
- Discharges to impaired 303(d) listed waterbodies (lower S.F. Bay)
- Impacts to creeks from discharges of turbid and high pH waters from quarries and mines in Livermore Valley

#### **Program implementation by RWQCB staff and local partners**

- More proactive response to major development plans by RWQCB staff
- More effective implementation of California's NPS Management Measures relating to agricultural and grazing lands by RWQCB, local agencies, and landowners
- More effective leveraging and oversight of grants
- Stormwater program improvements through critical review and comment on annual reports

### ***Proposed Workplan for FY 2004/05 and 2005/06***

#### **Urban Runoff**

- Review and comment on annual report from Alameda Countywide Clean Water Program
- Conduct annual storm water program audit

#### **Stream and Wetland Habitat Protection**

- Develop an agreement with flood control agencies for long-term maintenance of waterways
- Establish general permit for 401 certification with Alameda County Flood Control District
- Take action on 401/404 water quality certifications

#### Impacts from Pollutants

- Complete and implement the City of Livermore groundwater recharge projects
- Update the Livermore Valley Water Reuse Master Permit
- Monitor and assess Union Sanitary District's shallow water discharge at Hayward Marsh
- Reissue NPDES and Waste Discharge Permits

#### Program Implementation

- Provide guidance on permanent new development stormwater treatment measures,
- Assess adequacy of industrial stormwater inspections component, and seek improvement where necessary,
- Oversee 319 grants in Livermore Valley, San Lorenzo and Alameda Creek Watershed management
- Take enforcement actions as needed

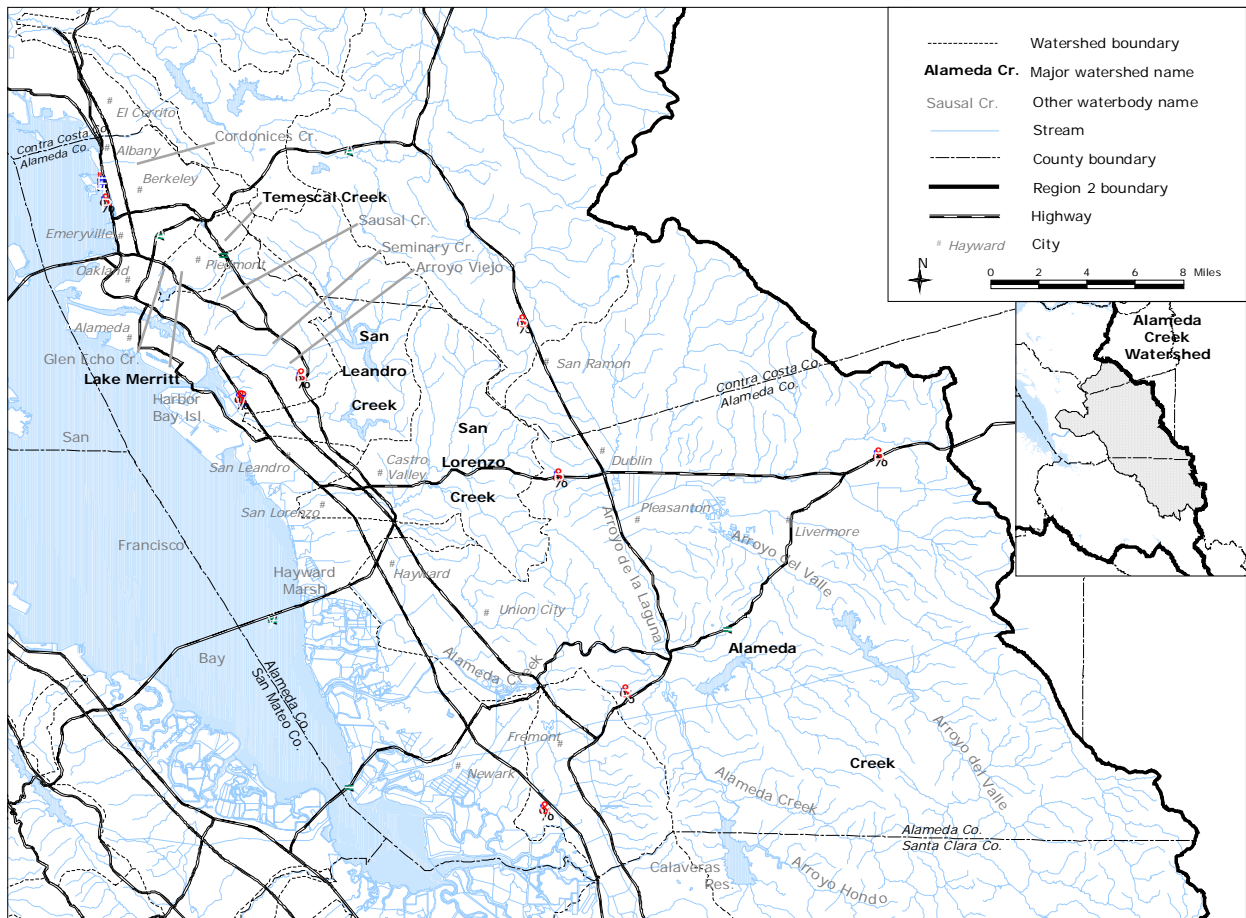
#### ***High Priority Unfunded Activities***

- Develop MP's for grazing for water district and park watersheds, and general rangeland
- Work with NRCS and RCD on grazing issues
- Oversee reclamation process in Livermore Valley
- Participate in salt management activities in Livermore Valley
- Participate in Alameda Creek Watershed Management Initiative
- Issue general permit for low threat *de minimus* discharges
- Complete CEQA review
- Develop an agreement with flood control agencies for long-term maintenance of waterways
- Assist in removing barriers to anadromous fish migration on Alameda Creek

#### ***High Priority Projects for Grant Funding***

- Riparian habitat and stream restoration projects

**Figure 3-1.**  
**Alameda County Watersheds**



### **3.3 CONTRA COSTA WATERSHED MANAGEMENT AREA**

The Contra Costa Watershed Management Area (Figure 3-2) includes areas within the jurisdiction of 17 municipalities and the county's unincorporated areas. The county is bounded by San Francisco Bay and San Pablo Bay to the west, by Suisun Bay and the channels of the Sacramento and San Joaquin Rivers to the north, the south by Alameda County, and to the east by San Joaquin County. The total area is approximately 800 square miles and contains a population of 962,900 (2000 census). The dominant demographic phenomenon has been the significant increase in urbanization of the county at the expense of agricultural land, which has declined by half since 1940. Contra Costa also has the largest number of municipal and industrial dischargers in the Region.

The County is divided into 3 geographic areas: West County, Central County, and East County.

*West County* – contains 27% of the urbanized area in the county and contains a mixture of residential and commercial and industrial uses. Only 10% of this watershed is in agriculture. Major industries in this area include petroleum refineries and chemical companies. The major creeks are Wildcat and San Pablo, which discharge into San Pablo Bay.

*Central County* – is the largest of the watersheds located in Contra Costa County and drains mostly residential areas. The largest land use designation is undeveloped at 48%, 44% is urbanized, with less than 5% in agriculture and only 3% is publicly owned. The major drainage areas are Grayson/Walnut Creek, San Ramon and Arroyo del Hambre, which drain into Suisun Bay and the Carquinez Straits.

*East County* - is predominantly undeveloped with agricultural uses comprising 70% of the watershed. Urbanized land uses comprise only 13% of the land area and the major receiving water is the Delta; however, most of this area is outside our Region's jurisdiction.

Municipal water supply is provided to the county by two main water purveyors. East Bay Municipal Utility District (EBMUD) provides water service to a large portion of the East Bay, including the urbanized western portion of the County as well as to central portions. Most of this water comes from the Mokelumne River. The Contra Costa Water District (CCWD) provides water service to the urban areas in the north of the county. The CCWD obtains its water from the Central Valley Project, via the Contra Costa Canal.

The predominant economic resources of the county include the petroleum and chemical industries and agriculture. The dominant trend in local agriculture in Contra Costa County since 1940 has been a significant decrease in the amount of acreage in production. Much of this decline is attributable to the increasing urbanization of the region. In Contra Costa County, land in all types of active agricultural uses (cropland and grazing lands) has declined by almost half, from over 400,000 acres in 1940 (85% of the County's total land area) to almost 216,000 acres in 1987 (46% of all County lands). The largest money-producing crops now are nursery crops (bedding plants, cut flowers, Christmas trees) and vegetables. Range and pasturelands account for a large portion of total agricultural acreage in the County.



The wide variety of terrain found in Contra Costa County supports several rare and endangered species and provides many acres of open space for recreational use. Major land forms include tidal and freshwater marshes along the bays and delta; sloughs, islands and tracts in the delta itself; and, inland, grasslands and mountain ridges, riparian woodlands, oak and redwood forests, among others.

### ***Significant Issues***

#### **Urban Runoff**

- Stream and wetland impacts from new development
- Water quality impairment from pesticides, fertilizers, animal waste, automobiles, and other typical urban runoff pollutants
- Changes to the hydrograph of watersheds due to development and increase of impervious surfaces
- Water quality impacts from industrial and commercial site development

#### **Stream and Wetland Habitat Protection**

- New development impacts
- Loss and degradation of wetland and riparian habitat
- Destabilization of stream channels due to hydrologic impacts
- Construction and post-construction sedimentation of streams

#### **Impacts from Point Source Pollutants**

- Wastewater discharges from major industries
- Increasing major industries in East County (e.g., two new proposed power plants with proposed water reclamation for cooling)
- Proposed redevelopment of several industrial sites, with potential use of wetlands for wastewater treatment along with traditional discharge methods
- Dioxin and selenium limits in NPDES permits
- NPDES permits now being scrutinized and appealed more than previously
- Inclusion of pollution reduction and waste minimization requirements in industry permits
- Effluent toxicity from POTWs
- Development and implementation of mass reduction load at petroleum refineries

#### **Program implementation by RWQCB staff and local partners**

- Continued proactive response to major development plans by RWQCB staff
- Effective implementation of California's Nonpoint Source Program Management Measures by RWQCB, local agencies, and landowners.
- Effective use of grants as a tool for achieving watershed management and water quality, through active recruitment of applications, and leveraging and oversight
- Continue to gain stormwater program improvements through critical review and comment on annual reports

### ***Proposed Workplan for FY 2004/05 and 2005/06***

#### **Urban Runoff**

- Oversee Contra Costa Countywide Stormwater Program
- Educate municipal and County staff in the Planning and Building and Grading Inspection departments, to clarify our expectations of their role in protecting water quality

#### Stream and Wetland Habitat Protection

- Take action on CWA Section 401 water quality certifications, including appropriate WDRs and mitigation monitoring reports; for new development, inspect projects sites and take enforcement actions as necessary.
- Train and educate municipal and County staff to enforce water quality at their level, with support from the Regional Board, in cases where their own actions are not sufficient

#### Impacts from Point Source Pollutants

- Reissue NPDES and Waste Discharge Permits
- Review reasonable potential analysis for 303(d) pollutants from storm water NPDES discharges into impaired water bodies
- Resolve outstanding issues with major NPDES permits

#### Program implementation by RWQCB staff and local partners

- Take enforcement actions as needed
- Continue to foster the activities of the Contra Costa County Watershed Forum and associated organizations
- Encourage education of citizens on water quality issues, especially towards training of a County-wide volunteer-based water quality monitoring program
- Utilize grants to: create a volunteer-based water quality monitoring program; support watershed characterization efforts, conduct restoration and invasive species removal activities; foster citizen water quality education programs.

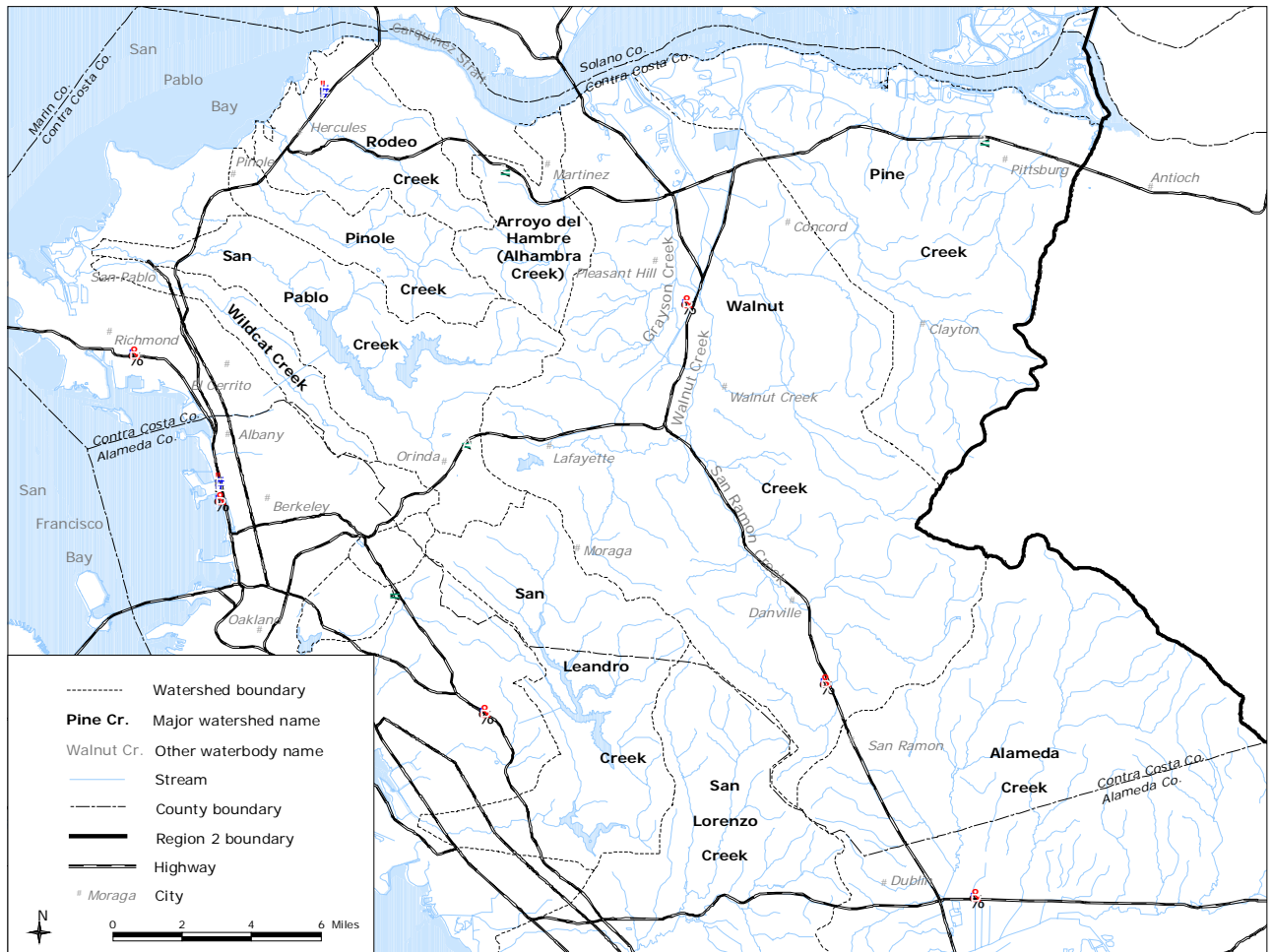
#### ***High Priority Unfunded Activities***

- Wastewater reuse - on-site alternative reclamation projects
- Support development and implementation of the San Ramon Valley High School's Environmental Engineering (E<sup>2</sup>) Academy
- Watershed outreach/education

#### ***High Priority Projects for Grant Funding***

- Continuation of citizen monitoring program, through a partnership between the Clean Water Program and the Watershed Forum (or through equivalent groups)
- Planning activities at county-wide as well as local watershed levels (through the Contra Costa Watershed Forum); fostering creek groups and encouraging restoration projects; long-term planning for new development mitigation issues (now under the auspices of the CCWF)
- Riparian habitat and stream restoration projects, including further improvements to the Alhambra Creek watershed

**Figure 3-2.**  
**Contra Costa County Watersheds**



### 3.4 MARIN WATERSHED MANAGEMENT AREA

#### *Overview*

Marin County covers 521 square miles and is bounded on the west and south by the Pacific Ocean, with significant its coastal bay and lagoon habitats, on the north by Sonoma County, and on the east by Richardson Bay and San Pablo Bay, the northern arms of San Francisco Bay (Figure 3-3). Marin offers a wide variety of topography, climate, and vegetation, from the tidal flats and wetlands of San Pablo Bay and the sandy beaches and rocky intertidal coastline of the Point Reyes Peninsula to the oak woodland, coastal redwoods, and grasslands of Mt. Tamalpais (2,600 ft). A significant portion of western and southern Marin County includes 141,400 acres of recreational open space of Mt. Tamalpais State Park, the Golden Gate National Recreation Area, and the Point Reyes National Seashore, which are a draw for the entire Bay Area. The county can generally be divided into two sections, with differing land uses, population densities, and water quality issues. East Marin comprises the relatively heavily urbanized corridor along Highway 101, consisting of a series of small municipalities. Land uses are primarily housing, commercial facilities, and light industry, with a few heavier industrial uses such as cement manufacturing, rock quarrying, and machine shops, mostly within or adjacent to the Cities of San Rafael and Novato. The area around Sausalito on Richardson Bay has a number of boatyards and marinas, as well as residual intertidal and subtidal sediment contamination from boat building activities during World War II. Coastal South and West Marin are largely rural, with the major land uses being agricultural (dairies, grazing, and some vineyards and specialty farming) and parklands (federal, state, and county). This area has small wastewater treatment plants and on-site septic systems serving the small unincorporated towns along the coast.

#### *Watershed Descriptions*

##### East Marin: San Francisco Bay

The major watersheds in eastern Marin County are (from north to south) Miller Creek, Gallinas Creek, Novato Creek, San Rafael Creek, Corte Madera Creek, and Arroyo Corte Madera del Presidio. Miller, Gallinas, San Rafael, and Novato Creeks flow eastward from semi-rural headwaters through urban areas and tidal wetlands into San Pablo Bay. Corte Madera Creek and Corte Madera del Presidio flow southeastward through highly urbanized valleys and discharge into San Pablo Bay and Richardson Bay, respectively. Marin County has extensive tidal and diked wetlands, particularly in the northern county. A large wetland restoration project is underway at the old Hamilton Air Force Base in Novato, and large wetland areas at Bel Marin Keyes and Bahia have been preserved through purchases within the past several years.

##### South and West Marin: Pacific Ocean and Tomales Bay

On the west side of the County is the 6800-acre Tomales Bay, one of the major estuaries on the Pacific Coast of California. Its diverse ecosystem supports abundant wildlife, and it is a very popular recreation area for kayaking, hiking, and sightseeing. Tomales Bay is an important haul out area for marine mammals and a migratory stop along the Pacific Flyway for many bird species. It is also an important haulout area for harbor seals. The Bay is one of four commercial oyster growing areas in California (the others are Drake's Estero, also in Region 2, Humboldt Bay in Region 1, and Morro Bay in Region 3) and is also known for its commercial fisheries and recreational crabbing, clamming and fishing. Lagunitas, Olema and Walker Creeks make up the

greater Tomales Bay watershed. Lagunitas, with its major tributaries of San Geronimo and Nicasio Creeks, flows northeastward and discharges into the southern end of Tomales Bay. Olema Creek flows northwest along the San Andreas Fault and discharges into Lagunitas Creek near its mouth. Walker Creek flows north-northwest and discharges into Tomales Bay near its northern end, close to the mouth of the Bay. The Bay is surrounded by significant areas of federal, state, and county parklands as well as by ranch and dairy lands on the east side, and several small communities.

Lagunitas Creek watershed, the largest in the county, drains 103 square miles of west central Marin, from the headwaters on the north slope of Mount Tamalpais to the southern tip of Tomales Bay. Lagunitas Creek and its tributaries, including San Geronimo Creek, Devil's Gulch, and Olema Creek, provide prime habitat for coho salmon, steelhead, and California freshwater shrimp. The watershed supports 10% of California's coho salmon runs, approximately 500 fish. The first eight miles of Lagunitas Creek are dammed for municipal drinking water (21.5 sq. mi. of watershed) by the Marin Municipal Water District (MMWD) as the creek flows through a series of reservoirs to Peters Dam at Kent Lake. Lagunitas and Olema Creeks are significant habitat for coho salmon, steelhead trout and California freshwater shrimp.

The Walker Creek watershed is 73 square miles, mostly in northwestern Marin County, with a small portion in Sonoma County. The predominant land uses are agriculture and grazing. The northern landscape of the lower watershed has open, low, rolling hills, while the upper watershed has rugged canyons. The creek is considered protected habitat by the U.S. Fish and Wildlife Service for coho salmon, steelhead, and California freshwater shrimp. Lagunitas Creek and Walker Creek were two of our initial planning watersheds for the Surface Water Ambient Monitoring Program (SWAMP).

On the southern coast, Redwood Creek flows from Mt. Tamalpais through Muir Woods National Monument and discharges into the Pacific Ocean at Muir Beach. Redwood Creeks is also a significant Coho salmon and steelhead spawning creek. Easkoot Creek in Stinson Beach and Pine Gulch Creek in Bolinas, are small coastal streams containing steelhead. Both of these watersheds are heavily used for recreation, including beach visits, hiking, birding, and horseback riding.

Bolinas Lagoon, located at the southern end of the Point Reyes Peninsula, is another significant Pacific Coast estuary. In 1998, the Lagoon was designated a Wetland of International Importance by the United States Fish and Wildlife Service in 1997, the only wetland along the west coast of the continental U.S. outside Alaska to be so designated. A total of 447 species of birds, fish and other animals make their home here. The lagoon covers 1,100 acres and is a critical link in the chain of wetlands along the Pacific Coast flyway where migratory birds can feed and roost before moving on. More than 24,000 water birds, such as loons and grebes, and 20,000 shorebirds, including sandpipers and long-billed curlews, visit each year. The lagoon also serves as a nursery for about 200 harbor seals, one-fifth of California's harbor seal population, who use the lagoon to rest, molt, warm themselves and give birth to some 50 pups each spring.

### ***Significant Watershed Issues in East Marin***

One of the major issues we see in all of Marin County is that of preserving and restoring the integrity of stream systems, including barrier removal for fisheries. In eastern Marin, significant water quality issues include wetland and creek modifications associated with new development and flood control, including a proposed extension of the existing flood control project on Corte Madera Creek, a proposed large dredging project in the Bahia Lagoon, and a major erosion control project on Novato Creek. Other issues include restoration of tidal and seasonal wetlands, e.g., Hamilton AFB, Petaluma River, and Bel Marin Keys, including the need to incorporate wetland goals from the Baylands Ecosystem Goals Report (1999) into watershed priorities. Water Board staff have been commenting on these efforts and closely following planning and design of these projects as they develop to potential permitting stage. Other potential pollutant issues in East Marin are impacts on San Francisco Bay from pollutants from marinas, houseboats, and boatworks, and pollutant discharges and dredging impacts from recreational lagoons adjacent to creeks and San Francisco Bay. All of the eastern creeks in Marin are included on the 303(d) impaired waterbody list for pesticides, including diazinon. In both eastern and western Marin, potential pollution from equestrian facilities is also an area of focus.

The County has an active countywide stormwater program (Marin County Stormwater Pollution Prevention Program or MCSTOPPP) that has a creek and watershed awareness focus and has been doing pilot creek assessments in several eastern Marin creeks, including an ongoing bioassessment program. The County program is active in working on urban runoff control issues, and a large focus of the next few years will be on implementing Phase II stormwater permitting. Permit coverage under the Small MS4 Permit is expected to begin in fall 2004. Understanding of how the County works with municipalities and how to educate and communicate with local agencies, especially on planning, is a key issue for the Water Board. MCSTOPPP will also be working on the County's pesticide reduction program as part of the Water Board's pesticide TMDL for San Francisco Bay. To address pesticide impacts, MCSTOPPP has received Proposition 13 grant funds to develop a program called "Alternatives to a Toxic Tomorrow" and 319(h) funds to expand the program to Regions 1 and 3.

Marin is currently in the process of rewriting its General Plan with the theme of "Sustainable Marin". The process will identify needs within watersheds and help with planning decisions. The County is also looking at a proposed zoning ordinance to establish standards for development and conservation within designated Stream Conservation Areas (50 feet from top of bank in urban areas and 100 feet in rural). The general plan will broaden the definition of streams from blueline to include ephemeral and intermittent. The General Plan process also includes developing watershed plans for East and West Marin.

### ***Significant Watershed Issues in South and West Marin***

Water bodies in west Marin on the 303(d) list are Tomales Bay (nutrients, sediments, pathogens, and mercury), Lagunitas Creek (nutrients, sediments, and pathogens), and Walker Creek (nutrients, sediment, and mercury). Impacts from sediment are also documented in Bolinas Lagoon.

In response to the passage of the state Shellfish Protection Act in 1993, which designated Tomales Bay shellfish beds as threatened by rainfall-related coliform levels, the Water Board established the Tomales Bay Shellfish Technical Advisory Committee, to determine remediation measures for the shellfish growing areas. Potential coliform sources include dairies and other confined animal facilities, grazing animals, on-site sewage disposal systems, small wastewater treatment facilities, and recreational use (i.e., boat discharges). In May 1998 there was an outbreak of Norwalk virus, a human pathogen, when approximately 170 people fell ill from eating Tomales Bay oysters. This public health crisis has led to increased focus on remediating on-site systems, providing sanitary facilities for boaters, and outreach to homeowners and visitors. Funding was provided to the County of Marin to repair and upgrade on-site septic systems along the Eastshore of Tomales Bay. A draft TMDL was developed for pathogens in Tomales Bay watershed in March 2004 and is expected to be adopted by the Water Board in mid-2005.

In response to the pollution threats to Tomales Bay, a group of stakeholders that includes local community members, agencies, environmental groups, shellfish growers, and dairy producers, came together in January 2000 to form the Tomales Bay Watershed Council. The Council completed the Tomales Bay Watershed Stewardship Plan in July 2003, which identifies goals and objectives for the watershed and an action plan. The Council has succeeded in getting funding for a coordinator, for plan development, and development of a fishery assessment and is currently working on developing a monitoring plan for Tomales Bay.

As noted above, Lagunitas Creek and tributaries are significant coho salmon and steelhead habitat. The creek is listed as impaired for sediments, nutrients, and pathogens. The reduced flow from the MMWD reservoirs has dramatically altered stream flows, thereby affecting aquatic habitat. A reduction in the magnitude and timing of peak flows can delay or prevent coho and steelhead migration and lead to an accumulation of sand and fine gravels that impair fish habitat due to a lack of flushing flows. Additionally, large woody debris (LWD), an essential habitat component for salmonids, is retained behind the dam. *Order # WR 95-17: Lagunitas Creek* from the State Water Resources Control Board (1995) delineates provisions to protect coho salmon, steelhead, and California freshwater shrimp, including flow and sediment requirements, LWD placement, and monitoring of turbidity, dissolved oxygen, and water temperature. MMWD was also required to produce and implement a sediment and riparian management plan and a fisheries management plan for the reach between Peters Dam and Tocaloma. MMWD completed the management plans in June 1997 and has been implementing them since then under the guidance of the Lagunitas Creek Technical Advisory Committee, which includes active Water Board staff participation.

Monitoring efforts are being conducted by MMWD to determine the success of their restoration program in mitigating the potential effects of the dam. However, this monitoring program does not address all of the necessary issues. Therefore, the Marin Resources Conservation District (RCD), working with the Tomales Bay Watershed Council, secured funding through a Proposition 13 grant to conduct a limiting factors analysis in Lagunitas Creek for salmonids and freshwater shrimp. Water Board staff manage the contract and work closely with the Council, RCD, MMWD, and state and federal parks on this effort, which will help inform the TMDL work on Lagunitas Creek. A stakeholder group (Lagunitas Advisory Group, or LAG ) has been

formed to oversee the Prop 13 limiting factors analysis. Water Board staff are also working closely with the LAG to secure additional funding for the full scale assessment that is necessary to determine the appropriate management actions to restore the watershed and complete the TMDLs. This Prop 13 grant also has significant funds allocated to watershed projects that will improve aquatic habitat in the Lagunitas Creek watershed. Much of this funding will go to sediment reduction projects and in effect, this is early implementation of a sediment TMDL. Water Board staff will also be managing a grant to the County of Marin to do a sediment study on San Geronimo Creek, to improve fish passage on selected tributaries, and reduce sediment inputs from roads and trails.

A local environmental group, the Salmon Protection and Watershed Network (SPAWN) is also working with volunteers to monitor San Geronimo and Lagunitas Creeks, conducting outreach, and implementing salmonid rescue efforts. Funded in part by a 319(h) grant, SPAWN will be collecting data that will be used for TMDL development in this watershed.

Walker Creek is listed as impaired for nutrients, siltation, and metals and is also considered impaired by exceedances of coliform. An abandoned mercury mine (Gambonini Mine) is located east of Tomales Bay on a tributary to Walker Creek. Baseline monitoring over the last three years indicated that the mine site is discharging a large quantity of mercury-laden sediment and is a significant source of mercury to Walker Creek, posing a significant threat to the beneficial uses of Walker Creek and Tomales Bay. Baseline monitoring and investigation are ongoing, with work now shifting towards developing and implementing remedial strategies. The Board is conducting a five-year Gambonini Mine Post-Remediation Monitoring (begun in winter 1998-99), sampling for dissolved oxygen, salinity, conductivity, pH, temperature, total suspended sediments, and mercury at eight sites near the mine. Cleanup of this mine has a top priority for the U.S. EPA and our planning staff. Staff is also working with the Marin RCD on a 205(j) planning grant to do geomorphic analysis of Walker Creek. Additionally, the California Department of Fish and Game (CDFG) has recently begun a program to restore coho populations to Walker creek through the release of coho from Olema Creek reared in their conservation hatchery. Water Board staff will be working with CDFG and local stakeholders in this effort.

Redwood Creek and the remnant lagoon at its mouth are the focus of a planning process by the Golden Gate National Recreation Area, which is assessing the alternatives for restoring the creek to its historic channel and lagoon configuration. Water Board staff is closely involved in this planning process and will be reviewing and commenting on the alternatives proposed. The County is preparing a Comprehensive Transportation Management Plan that includes the parklands along State Highway 1 and Mt. Tamalpais. The CTMP project brings together the County, GGNRA, State Parks, Caltrans, the public and other relevant agencies in southern Marin to identify recreational travel model options to reduce impacts on natural resources. This project is integral to the planning at Big Lagoon and Water Board staff is involved in public meetings on this process.

Easkoot Creek restoration project (270 meters, approximately 2 acres) includes both long and short-term actions to improve habitat conditions, including the restoration of the natural floodplain and pool habitats adjacent to Stinson Beach. Water Board staff have been involved in both planning and permit efforts. There are also major assessment and restoration efforts



underway for Bolinas Lagoon under the auspices of the Marin County Open Space District, which owns and manages the major part of the lagoon and surrounding land. The foremost resource management issues for Bolinas Lagoon are the continuing sediment accumulation and loss of estuarine habitat. Following a feasibility study by the U.S. Army Corps of Engineers to determine alternatives for restoring the lagoon's tidal prism, the County decided not to proceed as planned with a large dredging project due to uncertainties and concerns about both the need and effects of dredging, which were expressed by numerous agencies, environmental groups, and community members. The County of Marin and the Bolinas Lagoon Technical Advisory Committee (which includes Water Board staff) has begun a revised study process to determine the existing conditions and projected effects of alternative actions.

The National Park Service is also developing a plan for restoration of 563 acres of wetlands on the Giacomini Ranch at the mouth of Lagunitas Creek. Water Board staff have been very involved in the initial design stages of these projects through technical advisory committees and stakeholder workgroups. We expect to continue providing input on these projects as they evolve.

Other significant water quality issues in west Marin County watersheds include road erosion, hill and gully erosion and impacts to stream corridors, runoff from confined animal facilities (dairy and horses) and ranches, and on-site sewage systems. The County has been an active participant in the six-county FishNet 4C program, which is working with county governments under funding from SB271 to develop ways in which county governments can be more responsive to fishery concerns. Water Board staff work closely with the FishNet 4C and County staff, and we see this as a landmark effort to work with local government to protect the beneficial uses of the fish bearing streams in both east and west Marin areas. The County Environmental Health Services is beginning to address water quality concerns of creek pollution from on-site sewage systems through assessments of pollutant impacts in unincorporated rural areas and exploration of potential remediation strategies. The County received a Proposition 13 coastal nonpoint source grant in 2002 to assess Tomales Bay systems and develop a pilot remediation program, including potential construction of community on-site sewer systems. The Water Board has supported an agency liaison staff person, who works half time for the Board and half time for the County, to work on on-site septic system issues and pathogen TMDL implementation.

### ***Watershed Groups and Watershed Management Efforts***

Currently, there are watershed management projects in progress in many watersheds throughout the County. These projects are lead by the Marin Resource Conservation District, local community groups, and volunteer monitoring groups. Water Board staff participate in meetings, provide technical support, and oversee grants.

<b>Watershed</b>	<b>Lead(s)</b>	<b>Activities</b>
Corte Madera Creek	Friends of Corte Madera Creek Watershed, Marin County Stormwater Program	Watershed plan, fisheries study, sediment study, bioassessment
Arroyo Corte Madera del Presidio (Mill Valley)	Mill Valley StreamKeepers, Marin County Stormwater Program	Public education, creek assessment, bioassessment.
Lagunitas Creek	Marin Municipal Water District	Sediment and riparian

<b>Watershed</b>	<b>Lead(s)</b>	<b>Activities</b>
	(MMWD), RWQCB, CA Fish & Game, Marin County, State Parks, National Park Service, SPAWN (Salmon Protection and Watershed Network)	corridor & fisheries management plans, Giacomini wetlands restoration. Grants: limiting factors, sed budget, erosion control projects, vol. monitoring.
San Geronimo Creek	MMWD, Salmon Protection & Watershed Network (SPAWN)	Sediment management plan, fisheries assessment restoration, education.
Miller Creek	Marin County	Watershed assessment, bioassessment.
Novato Creek	Marin County, Friends of Novato Creek	Watershed assessment, bioassessment,
Redwood Creek (Muir Woods)	National Park Service	Watershed assessment, Restoration planning, restoration, volunteer monitoring.
Bolinas Lagoon	Bolinas Lagoon TAC, Marin County Open Space District	Feasibility studies on impacts of sedimentation on the lagoon
West Marin Watersheds, Olema Creek, Pt. Reyes	National Park Service	Coho salmon studies/restoration.
Tomales Bay	Tomales Bay Watershed Council (local stakeholders, Marin RCD, County, agency representatives)	Watershed plan developed, monitoring proposal
Hamilton Wetlands	Coastal Conservancy, US Army Corps	Tidal wetlands restoration underway
North Bay Watersheds in Marin and Sonoma	North Bay Watershed Association, a consortium of water agencies, stormwater and local government	Developing regional watershed planning and assessment

### ***Proposed RWQCB Staff Workplan for FY 2004/05 and 2005/06***

#### **Urban Runoff**

- Oversee countywide stormwater program including reviewing MCSTOPPP's annual report, conducting annual stormwater program audits of each municipality, and supporting MCSTOPPP's equestrian technical assistance program
- Work with County on implementation of Phase II stormwater permitting

#### **Stream and Wetland Habitat Protection**

- Take action on 401/404 certifications and WDRs, using stream circular guidelines and working with the County to promote biotechnical bank stabilization techniques
- Work with Marin RCD and Sustainable Conservation to certify a regional permit for restoration projects on agricultural lands
- Work with stakeholder groups and the County on several grant projects (see below for details) including limiting factor studies, sediment budgets, on-site septic system repair,

volunteer monitoring and habitat improvement projects in Lagunitas and Walker Creek Watersheds

- Work with the National Park Service on a variety of stream and wetland restoration projects, providing technical input and permitting
- Work with MMWD on regional permit for roads and trail improvement projects

#### Impacts from Pollutants

- Take enforcement actions as needed
- Continue ongoing post-remediation Gambonini mine site monitoring and assessment and downstream monitoring; focused investigation of the potential impacts of mercury to the beneficial uses of Tomales Bay
- Continue dairy compliance program, with potential equestrian facility outreach and inspections
- Tomales Bay Activities
  - Oversee Shellfish Technical Advisory Committee and develop Tomales Bay shellfish contamination source identification and remediation strategy in conjunction with pathogen TMDL
  - Work with Tomales Bay Watershed Council to implement watershed stewardship plan and monitoring program
  - Continue Tomales Bay pathogen TMDL monitoring
  - Develop nutrient TMDLs for Walker Creek, Tomales Bay, Lagunitas Creek
  - Continue supporting County and Water Board coordination through Agency Liaison position for septic system and pathogen issues in Tomales Bay
- Conduct annual sampling of Richardson Bay for coliform (houseboat and marina areas)
- Reissue NPDES and Waste Discharge Permits as needed
- Complete pretreatment compliance inspections
- Conduct annual compliance inspections for NPDES and WDR permit holders

#### Program Implementation by RWQCB staff and local partners

- Contract management for Prop 13 grant awarded to Marin RCD for implementation of best management practices to address runoff from dairy and grazing lands and boating and other recreational activities in Tomales Bay watershed
- Contract management for Prop 13 grant to County of Marin to implement East Shore septic improvement projects
- Contract management for Marin RCD/Tomales Bay Watershed Council Prop 13 grant for limiting factors study on Lagunitas Creek
- Contract management for 319(h) volunteer monitoring program by SPAWN on Lagunitas Creek
- Contract management for Prop 13 grant to Marin County Public Works to restore fish passage and sediment budget study San Geronimo Creek
- Participate on Lagunitas Creek Technical Advisory Committee
- Review Bolinas Lagoon Technical Advisory Committee sediment study products as needed
- Work with SWRCB and Department of Boating and Waterways on grant for assessment of boating pumpout needs and installation in Tomales Bay and Richardson Bay
- Work with National Park Service, Coastal Commission, and others on mooring management in Tomales Bay

- Work with National Park Service on design and implementation of lagoon restoration activities at Muir Beach

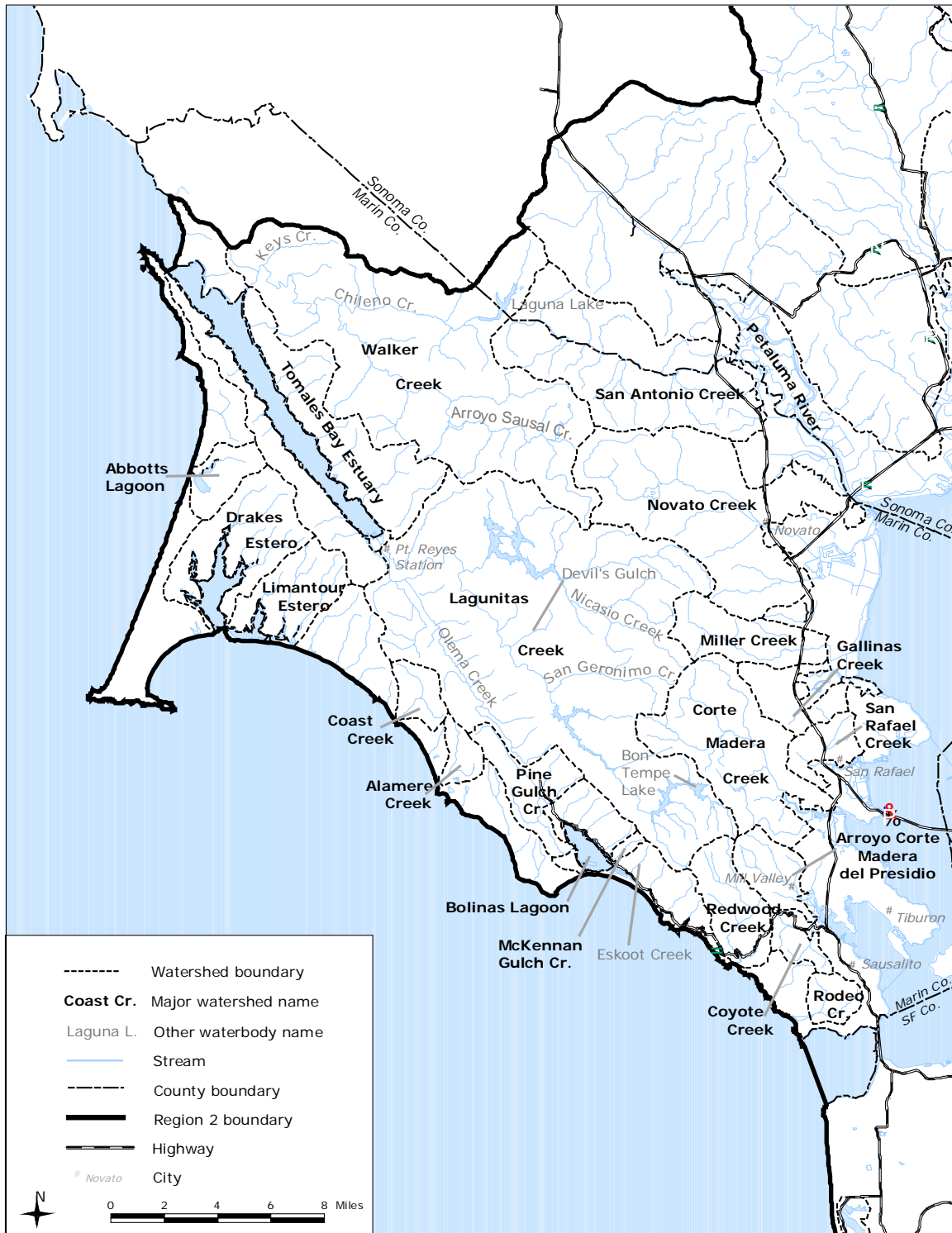
***Potential Priority Unfunded Activities***

- Monitoring effectiveness of TMDL implementation activities
- Grazing and rangeland management

***High Priority Projects for Grant Funding***

- Tomales Bay: pollution source analysis, development of best management practices for sediment, pathogens, nutrients, and metals, and implementation of monitoring program
- Miller, Novato, and Corte Madera Creeks: development of watershed plans and implementation of sediment budget study recommendations; watershed monitoring
- Comprehensive watershed analysis and restoration plans to protect threatened and endangered salmonids: Lagunitas Creek, Olema Creek, and Redwood Creek.
- Purchase of existing wetlands and diked baylands for restoration on San Francisco Bay
- Assessment and remediation of on-site sewage systems in South and West Marin

Figure 3-3. Marin County Watersheds



### 3.5 NAPA WATERSHED MANAGEMENT AREA

The Napa River Watershed (approximately 430 square miles) is the portion of western Napa County within our jurisdiction (Figure 3-4). Eastern Napa County (approximately 360 square miles) is within the Central Valley Regional Board. The watershed is predominately rural, with the fastest growing land use is urban housing. The largest community, Napa, has a population of 72,585 (2000 census). The Napa River is intermittent in the northern reach, but becomes perennial due to groundwater discharge. The Napa River is a significant freshwater tributary to San Francisco Bay. Wastewater discharges to the Napa River occur during the wet season only; during dry months 100% of wastewater flows are reclaimed.

The Napa River and numerous tributaries support steelhead, federally listed as a threatened species. Additionally, the California Freshwater Shrimp (*Syncaris pacifica*), listed as endangered by state and federal government, resides within the watershed. The beneficial uses include: Cold Freshwater Habitat, Warm Freshwater Habitat, Fish Spawning, Fish Migration, Preservation of Rare and Endangered Species Habitat, Wildlife Habitat, and Municipal and Domestic Water Supply. The extensive marshlands bordering the lower river teem with hundreds of thousands of migratory birds during the fall and spring, and host two endangered species, the California clapper rail and the salt marsh harvest mouse.

The watershed supplies 85% of the county's total water demand through its ground and surface water production. The cities of Calistoga, American Canyon, Napa and Yountville also receive water from the State Water Project.

The Napa River is on the 303(d) list for nutrients, pathogens, and siltation. The sediment listing is based predominately on qualitative visual assessments of the Napa River and its tributaries by Board and CDF&G staff. It is suspected that nutrient loading is one cause of exceedences of the water quality objectives for biostimulatory substances and dissolved oxygen. Staff also believe that the standards for total and fecal coliform are not being achieved in some parts of the watershed.

Many local, state and federal agencies are involved in watershed protection efforts in the Napa River Watershed. The Napa County Board of Supervisors convened a Napa River Watershed Task Force (NRWTF) in February 1999. This task force is comprised of local citizens selected for their expertise and their ability to represent the views of interest groups within the Napa County community. Numerous agencies including the Regional Board, Natural Resources Conservation Service (NRCS) and the Napa County Resource Conservation District (RCD) are advisory to this task force. The short-term mission of this task force is to make recommendations to the County Board of Supervisors regarding interim measures specific to the development of vineyards, and intended to protect the economic, ecological and social health of the community. It is anticipated that this forum will continue to serve as a long-term task force to address important issues in the Napa Valley such as the sediment TMDL, and surface and ground water allocations.

The Napa RCD is a leader in many aspects of Napa County's watershed management activities. Their efforts have lead to successful implementation of several community based water quality projects.

## ***Significant Issues***

### **Urban Runoff**

- Impacts from new development

### **Stream and Wetland Habitat Protection**

- Need for comprehensive baseline watershed assessment
- Alteration of flow regime due to water diversions and flood control levees and channelization leading to:
  - a) dry season streamflow reduction by surface water diversions and groundwater extraction
  - b) peak flows during wet season potentially increases flooding and stream bank failure
  - c) flooding and associated flood management practices
- Development and loss of wetlands south of Napa in the airport industrial area.
- Loss of riparian habitat due to farming practices.

### **Impacts from Pollutants**

- Impairment in the Napa River and tributaries due to siltation, nutrients, pathogens, and possibly dissolved oxygen, high temperature, and eutrophication, impacts in the Napa River.
- Wastewater discharge impacts on surface water and groundwater.

### **Program implementation by RWQCB staff and local partners**

- More active response to major development plans by RWQCB staff
- More effective implementation of California's NPS Program Management Measures by RWQCB, local agencies, and land owners.
- More effective leveraging and oversight of grants
- Stormwater program improvements through review and comment on annual reports

## ***Workplan for FY 2004/05 and 2005/06***

### **Urban Runoff**

- Implement Phase II stormwater program

### **Stream and Wetland Habitat Protection**

- Take action on 401/404 certifications
- Oversee contract with UC Berkeley to conduct watershed assessment and sediment budget as part of a sediment TMDL-equivalent process.
- Coordinate with NRCS, Napa RCD, Fish and Game, Napa Flood Control District and Napa County government agencies to address erosion sources not covered by county ordinance by participating in monthly Conservation Information Group (CIG) meetings.
- Ongoing participation in development of the Napa River Flood Management issues:
  - Oversight of timely cleanup of TPH-impacted sites along the Napa River
  - Oversight and participation on technical advisory committee

### **Impacts from Pollutants**

- Reissue NPDES and Waste Discharge Permits

### **Program Implementation by RWQCB staff and local partners**

- Pursue enforcement against estimated 2-10 erosion or illegal fill violators
- Work with the Napa RCD and give priority to RCD/NRCS-funded creek restoration activities
- Pursue a general permit and WDR's for RCD/NRCS-lead creek restoration activities
- Monitor vineyard conversion (development) in sensitive watersheds such as Angwin lakes, Lake Hennessy and Rector Creek

- Take enforcement action as needed

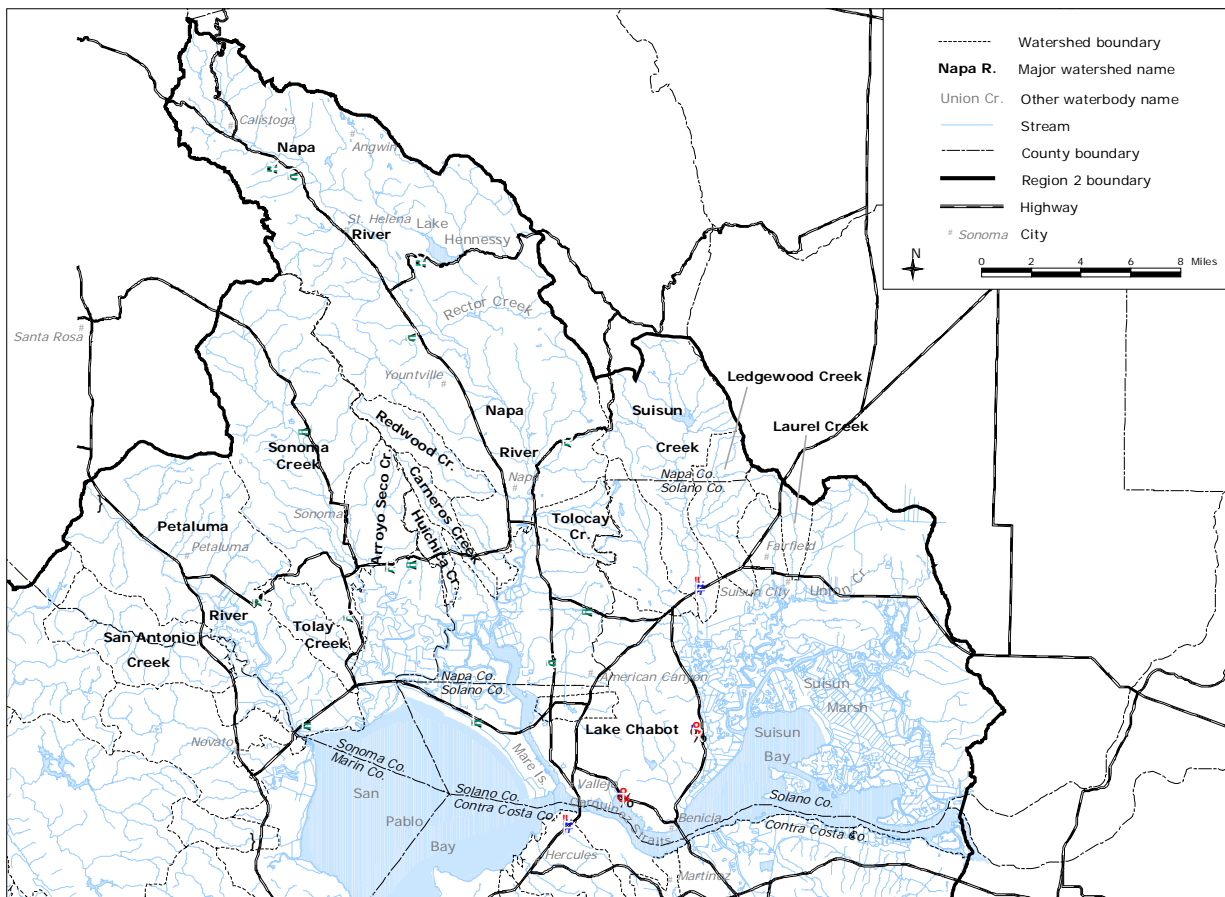
#### ***High Priority Unfunded Activities***

- Conduct CEQA review of new development projects
- Build upon existing monitoring and assessment efforts to develop linkages to TMDL baseline monitoring assessment needs

#### ***High Priority Projects for Grant Funding***

- Salmonid habitat restoration proposed by Department of Fish and Game. RCD/NRCS has had success in obtaining these grants. Board should support their efforts.
- There are a number of additional grant concepts for the Napa River watershed including: development of a historical reference state model for determination of a sediment TMDL, beneficial use survey and assessment, limiting factor analysis for steelhead, current and historical hydrology and water budget analyses, study of groundwater discharge effects on stream recharge and temperature, nutrient source assessment and development of source reduction best management practice, implementation of nutrient source reduction best management practices, evaluation of pesticide use and water quality monitoring, radio telemetry flyover to obtain watershed basemap, and development of GIS system to integrate information.





**Figure 3-4. Watersheds in Napa, Sonoma, and Solano Counties**

### **3.6 SAN FRANCISCO WATERSHED MANAGEMENT AREA**

At the center of our Region, both geographically and symbolically, is the City and County of San Francisco (the City), which share the same boundary. Located at the tip of a narrow 46.7 sq mi. peninsula, San Francisco County is bounded by the Pacific Ocean to the west and by San Francisco Bay to the north and east (Figure 3-5). With a population of approximately 776,700 (2000 census), San Francisco is the most densely developed of the Region's nine counties. Northeast San Francisco is the most developed, with commercial downtown high-rises and apartment buildings. The southeastern part of the City is largely industrial and residential, with limited open space. The eastern shoreline is largely developed and devoted to maritime and industrial uses, some of which are obsolete. Accordingly, there are numerous redevelopment projects along the shoreline. The west side of the City is predominately residential, but also features large open spaces including Golden Gate Park, Lincoln Park, the Golden Gate National Recreation Area (which encompasses the Presidio, Ocean Beach, and Fort Funston), Lake Merced, and several golf courses surrounding the lake. The County also includes Treasure Island and Yerba Buena Island in San Francisco Bay, which belong to the U.S. Navy (Treasure Island is in the process of being transferred to the City as part of the base closure program), and Alcatraz Island, formerly the site of the notorious federal prison and now part of the State Park system. The City also has several other base closure sites (Hunter's Point, the Presidio) where land is being turned over for redevelopment, with attendant issues of toxic cleanups, groundwater remediation, and redevelopment.

San Francisco is unique in the region in several significant ways: 1) although the City has several large groundwater aquifers, it relies completely on imported surface water from Hetch Hetchy reservoir in the Sierra Nevadas, 2) most of San Francisco has a combined sanitary sewerage and storm water collection system and outfalls (CSOs), 3) the County is almost completely built out and has a very high proportion of impervious surfaces and therefore lack of groundwater recharge areas, and 4) there are virtually no stream systems left in the County, with the exception of some bayside tidal sloughs (Mission Bay, Islais Creek, Yosemite Creek) and a few small lakes and streams within the Presidio and other parks.

Elevated levels of nitrates are the most pervasive groundwater quality problem in San Francisco, with fertilizers and leaking sewers as potential sources. Other water quality issues include toxic cleanups at former military bases, potential water reclamation and groundwater reuse, impacts associated with redevelopment projects on the base sites and along the southeast shoreline, stormwater impacts from non-CSO areas of the City, and direct discharges into San Francisco Bay from shoreline areas. Staff has increased industrial inspections along the shoreline piers and will also be working with the City on Phase II permitting for these areas and other non-CSO parts of the City. Recently, San Francisco County has completed both groundwater and reclaimed water master plans that reflect the goal of diversifying water supplies. There has also been increasing focus on Lake Merced, an important wildlife habitat and recreational area in the southwest corner of the City, since water diversions to nearby golf courses and other uses have had severe impacts on the lake. San Francisco and San Mateo Counties have been working on solutions to the problem, including the possibility of diverting stormwater from the combined sewer facilities in that area or using reclaimed wastewater for irrigation rather than taking water from the lake. Regional Board staff will be actively involved in reviewing any of these proposals for potential impacts on beneficial uses.

Another major issue in the City and County is the proposed large scale expansion of the San Francisco airport, which would require extensive bay fill. Although the airport is within the County of San Mateo, the City of San Francisco owns and operates the airport facilities and is of course involved in all decision-making. Staff will be part of any pre-project review and permitting activities relating to the airport.

### ***Groundwater Resources***

The City is considering further development of its groundwater resources. Current groundwater usage in the City is primarily for irrigation of parks and golf courses. San Mateo County withdraws groundwater for potable uses, resulting in declining water levels of Lake Merced. Seven groundwater basins (Westside, Lobos, Downtown, Marina, Islais Valley, South and Visitation Valley basins) occur beneath the City, delineated and separated on the basis of bedrock ridges and topographic divides. The Lobos, Marina, Downtown and South Basins are contained wholly within the City limits. The Islais Valley Basin extends beneath Daly City, Visitation Valley extends beneath the City of Brisbane, and the Westside Basin extends south of the City across several political boundaries (the Cities of Daly City, Colma, South San Francisco, San Bruno, and Millbrae) past the San Francisco International Airport. Westside Basin is the most promising basin in terms of groundwater development. It is the largest basin in San Francisco in areal and vertical extent, and composed primarily of course-grained materials. Groundwater in the southern portion of the Westside Basin and Lobos Basins is already used for potable purposes and is routinely sampled and analyzed for compliance with drinking water standards; therefore, the groundwater in these basins is considered potable.

Groundwater in the northern portion of the Westside Basin is also considered potable based on limited historic data and preliminary sampling results obtained in 1993; however, the data indicates that occasional concentration of nitrates, chlorides, iron, total dissolved solids, and fecal coliform have been detected above drinking water standards. Downtown Basin groundwater is being considered for nonpotable uses only (i.e., toilet flushing, irrigation, and climate control) because of the historic industrial development and the density of identified hazardous waste sites. Groundwater within the remaining basins (Marina, Islais Valley, South and Visitation Valley Basins) have not yet been fully assessed. The City's Water Department will need to address several technical and institutional issues (i.e., saltwater intrusion, subsidence, leakage from leaking tanks and sewer utilities, etc.), before utilizing groundwater for potable uses.

### ***San Francisco Groundwater Beneficial Use Designation Project***

In 1996, the Regional Board's staff Groundwater Committee completed a report titled "San Francisco and Northern San Mateo County Pilot Beneficial Use Designation Project, Draft Staff Report." This effort included a comprehensive evaluation of hydrogeology, future groundwater uses, and alternatives for revised beneficial use designations. The results are summarized below and incorporated into the Basin Plan Amendments available at: [http://www.swrcb.ca.gov/%7Erwqcb2/basin\\_plan\\_ammend.htm](http://www.swrcb.ca.gov/%7Erwqcb2/basin_plan_ammend.htm).

- The Basin Plan should be amended to include more recent information regarding the boundaries and beneficial uses of groundwater basins on the San Francisco Peninsula.
- The MUN beneficial uses should be de-designated for the Downtown Groundwater Basin and Treasure Island.

A prioritization map for groundwater management is shown in Figure 3-6.

### ***Significant Watershed Issues***

- Military base conversion at Hunter's Point, Treasure Island, and the Presidio, and associated water quality concerns related to storm water, groundwater contamination, and redevelopment
- Phase II permitting for non-CSO areas of San Francisco, including federal and state facilities
- Water quality impacts of fish processing and other facilities along the waterfront of the Port of San Francisco
- Beach closures due to coliform contamination at Baker, China, Ocean and Ft. Funston beaches; beaches proposed for 303(d) listing as impaired waterbodies
- Contaminated sediments in Islais, Mission, and Yosemite Creeks
- Wetland restoration and associated toxic hotspots
- Caltrans construction of new Bay Bridge and associated stormwater runoff pollutants, wetland impacts, and impacts to Yerba Buena Island
- Ground water contamination and associated reclamation and potential drinking water concerns
- Re-development projects at Mission Bay, Treasure Island, Ferry Terminal, Port of San Francisco, and the Presidio
- Protection of Beneficial Uses and water reclamation at Lake Merced
- Increasing contaminant levels of PAHs in dredge sediments from yearly dredging at Piers 33 and 35 by the Port of San Francisco
- Exotic species in nearshore waters of San Francisco and wetland restoration sites

### ***Proposed Workplan for FY 2004/05 and 2005/06***

- Review and comment on the Port of San Francisco stormwater program
- Stormwater inspections for fish processing facilities, boatyards, and other waterfront areas; request and review stormwater management plans
- Development of a municipal storm water permit under Phase II for non-combined sewer system areas, including Lake Merced and the Port of San Francisco
- Staff review of Presidio treatment plant and reclamation proposal
- Hunter's Point ecological risk assessment for offshore sediments; records of decision for groundwater remediation
- Treasure Island ground water extraction and TPH remediation; review proposals for redevelopment; review dredging proposals
- Implementation of proposed 303(d) listing for beach closures
- Review of dredging proposals by the Port of San Francisco
- Take action on 401/404 permits
- Reissue NPDES Permits as necessary

- Review of San Francisco airport expansion proposals and pre-project permitting activities

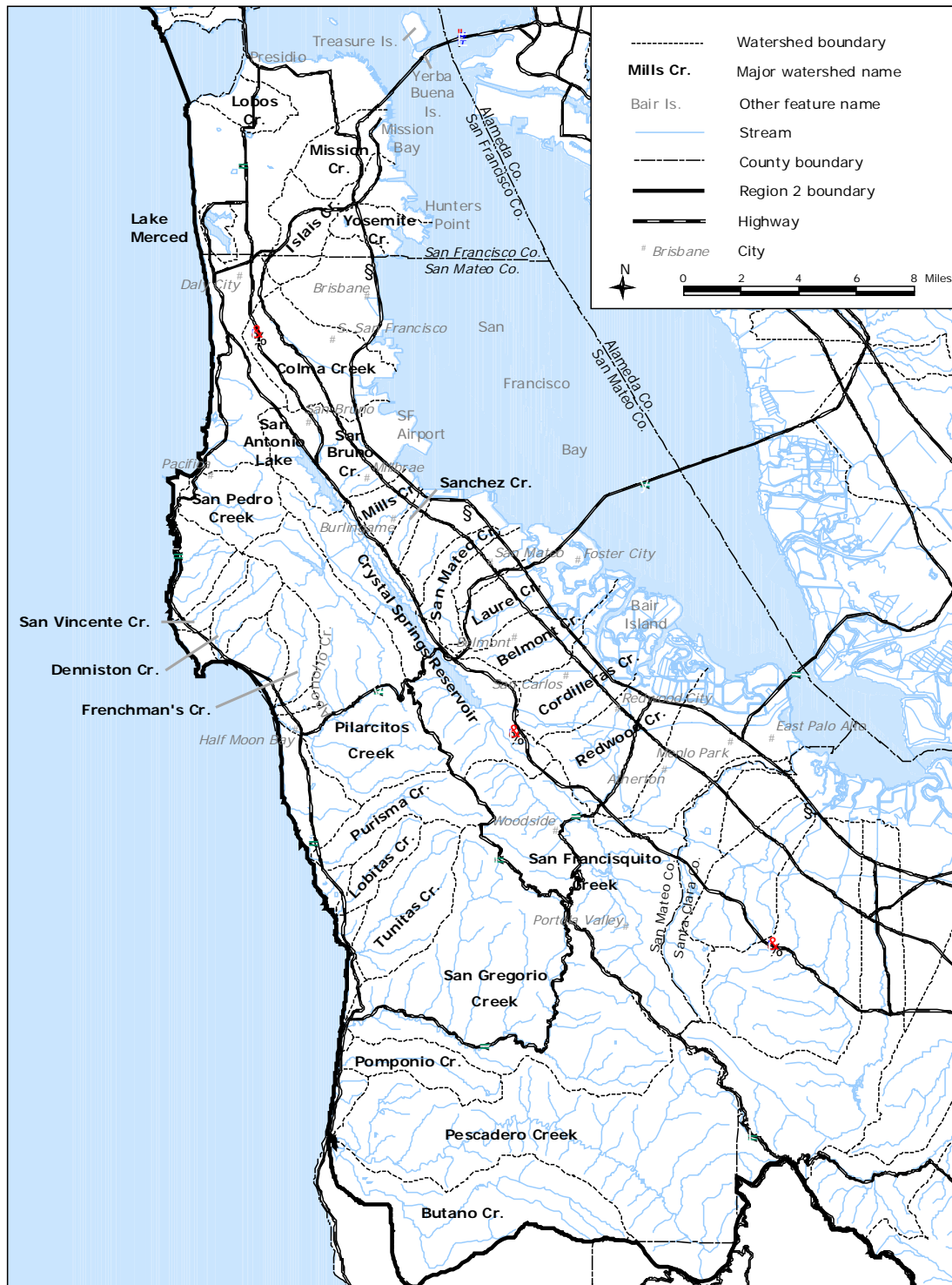
***High Priority Unfunded Activities***

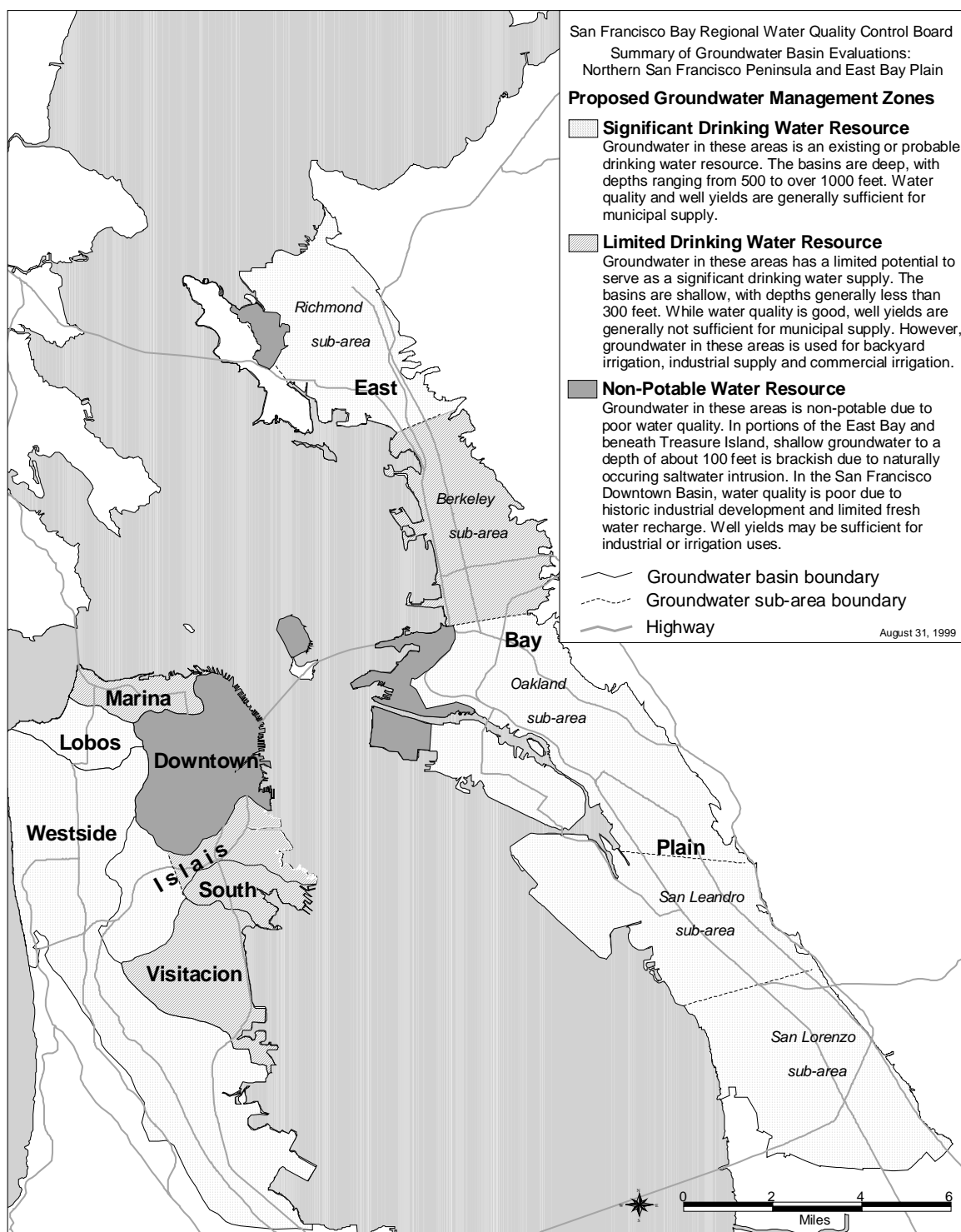
- Study the effects of CSO on the sediments and water surrounding the outfalls
- Increased monitoring and assessment of potential contaminants, including the use of marine mammal testing
- Beach monitoring
- Development of a Wellhead Protection Program

***High Priority Projects for Grant Funding***

- Best Management Plan for Fish Handling Facilities
- Best Management Plan for Marinas and Piers
- Monitoring of beaches to address closures and remediation
- Education and outreach activities

**Figure 3-5.**  
**San Francisco and San Mateo Watersheds**





**Figure 3-6.**  
**San Francisco Groundwater Basins**

### 3.7 SAN MATEO WATERSHED MANAGEMENT AREA

San Mateo County is located on a peninsula, bordered on the north and east by San Francisco Bay and on its west by the Pacific Ocean (Figure 3-5). The county, which has 20 cities, covers about 450 square miles with the majority of the population concentrated in the eastern part of the county. The San Mateo Range runs north/south through the county on its western side. The western part of the county has considerable amounts of agricultural and open space lands, with pockets of urbanization particularly in the northern part of the county in Daly City and Pacifica and around Half Moon Bay. To the east of the range lies the flat, more densely urbanized area. About 26 percent (74,300 acres) of the county's total 285,000 acres is considered urbanized.

San Gregorio Creek, Pescadero Creek and San Francisquito Creek are listed as impaired water bodies (303(d) list) for sediment due to degradation of salmonid habitat. All three water bodies support steelhead trout runs. Steelhead trout are Federally-listed as threatened in central California. Coho salmon are still thought to be present in Pescadero and San Gregorio Creeks, and these basins are listed as top priority streams in Department of Fish and Game's Coho recovery plan for streams south of the Golden Gate. Coho salmon are State-listed as endangered (south of the Golden Gate) and Federally-listed as threatened in central California. National Marine Fisheries Service staff has stated that the risk of extinction of Coho salmon south of the Golden Gate is higher than for almost any other run of salmonids on the west coast (S.Kramer, personal communication).

We have prepared a workplan to establish and implement Total Maximum Daily Loads for sediment to address potential sediment problems in the listed creeks. Of vital importance in this effort is the initiation of holistic watershed assessments to determine whether sediment is actually a major factor limiting salmonid populations or whether watershed disturbances are of equal or greater importance as limiting factors (e.g., water diversion, reduction in large woody debris loading, stream temperature, etc.). A number of stakeholder forums have been established in the west county watersheds as part of locally initiated Coordinated Resource Management Planning (CRMP) processes. These and other ongoing projects are listed in the following table.

<b>Watershed</b>	<b>Lead</b>	<b>Activities</b>
San Francisquito Creek	San Francisquito CRMP	CRMP, volunteer monitoring nutrient pollution assessment, flood management planning, riparian planting
Pilarcitos Creek	CA Fish & Game, San Mateo Co RCD	Creek Restoration, management plan, fish passage, sediment budget
Pescadero/Butano Creeks	San Mateo Co RCD Monterey Bay National Marine Sanctuary	Watershed assessment, sediment budget, creek stabilization
San Gregorio Creek	San Mateo Co. RCD	Mainstem channel restoration near mouth



<b>Watershed</b>	<b>Lead</b>	<b>Activities</b>
Bair Island	Peninsula Open Space Trust	Tidal marsh, seasonal wetland, upland restoration
San Pedro Creek	San Pedro Creek Watershed Coalition	Watershed assessment, creekside resident education/outreach, exotic vegetation removal, biotechnical bank stabilization, fecal coliform source ID testing

The coastal waters of San Mateo County are within the Monterey Bay National Marine Sanctuary. This presents opportunities for collaboration with other water resource protection efforts, such as the Sanctuary's Agricultural Initiative. Pescadero Creek watershed has been selected as a pilot basin for initial implementation of the Agricultural Initiative in San Mateo County; these efforts hold tremendous promise if they can be effectively implemented. In addition, the San Mateo Stormwater Pollution Prevention Program (STOPPP) effort is being expanded to provide baseline watershed inventory and assessment information in the San Francisquito Creek watershed. We are currently working with the San Francisquito Joint Powers Authority (JPA), which includes representatives from the Santa Clara Valley Water District, San Mateo County Flood Control District, and the cities of East Palo Alto, Menlo Park, and Palo Alto, to address water quality and flood control issues within the watershed. The JPA has received a Proposition 13 grant, and we have formed an inter-disciplinary Technical Advisory Committee to initiate a sediment budget study of the watershed.

San Mateo County has implemented a confined animal waste ordinance that has reduced pollution from horse boarding facilities. San Mateo County and the town of Portola are currently considering adopting creek setback ordinances.

On July 21, 1999, the Regional Board reissued an NPDES permit for San Mateo Countywide Stormwater program (twenty cities and towns and unincorporated areas). The permit requires reduction of pollutants in stormwater discharges to the maximum extent practicable and the elimination of unauthorized non-stormwater discharges. It also requires reduction of pollutants that cause or contribute to violations of water quality standards. The permit requires the permit holders to implement Stormwater Management Plans (the Plans), which specify the measures that are needed to control pollutants in stormwater. The Plans consist of a series of pollution control activities designed to identify and implement control measures to reduce, if not eliminate, pollutants in storm runoff to the maximum extent practicable and to demonstrate compliance with water quality objectives in receiving waters. STOPPP is required to submit annual report(s) that include evaluation of the effectiveness of the Best Management Practices and Performance Standards for each pollutant control measure. Furthermore, STOPPP is required to identify types of activities that need improvements and implement them accordingly. STOPPP is also required to evaluate sources and loadings, as well as management measures, for pollutants including diazinon, PCBs, and mercury.

## ***Significant Issues***

### **Urban Runoff**

- Stream and wetland impacts from new development
- Water quality impairment from pesticide runoff
- Water quality impacts from industrial and commercial facilities and illicit discharges

### **Stream and Wetland Habitat Protection**

- Declining steelhead and Coho salmon habitats in coastal streams.
- Uncertainty in current stream conditions due to a lack of watershed assessment data
- Degrading stream quality from rural road erosion
- Water quality impacts from proposed San Francisco Airport expansion wetland fill
- Declining water levels in Lake Merced

### **Impacts from Pollutants**

- Beach pollution and closures from sewage overflows
- Creek pollution by nutrients from horse stables
- Water quality impacts from coastal agricultural facilities, including irrigation runoff, fertilizer and pesticide discharges, and habitat impacts on tributary creeks

### **Program Implementation by RWQCB staff and local partners**

- Regulating water quality compliance at new Pacifica wastewater treatment facility
- Groundwater management of the Westside Basin
- More effective implementation of California's Nonpoint Source Program Management Measures by RWQCB, local agencies, and land owners.
- More effective leveraging and oversight of grants
- Gain stormwater program improvements through critical review of annual reports
- Technical assistance and support for county planning and public works staff (streambank ordinance, rural road maintenance standards, CEQA review)

## ***Proposed Workplan for FY 2004/05 and 2005/06***

### **Urban Runoff**

- Oversee San Mateo County Urban Runoff Program

### **Stream and Wetland Habitat Protection**

- Review and approve 401 water quality certifications, approximately 50 applications per year.

### **Impacts from Pollutants**

- Reissue NPDES and Waste Discharge Permits
- Resolve outstanding issues with major NPDES permits
- Implement TMDL workplan components

### **Program Implementation by RWQCB staff and local partners**

- Oversee 319(h) grants for Pescadero Creek and Apanolio Canyon
- Oversee Proposition 13 grant for San Francisquito Creek
- Oversee Pilarcitos Creek restoration
- Take enforcement actions as needed

## ***High Priority Unfunded Activities***

- Enforce water quality violations from horse stable operations
- Review of CEQA documents

- Document and follow-up on suspected septic systems discharges into creeks during storm events that lead to beach closures
- Assist in implementing strategies from Agricultural and Rural Lands Action Plan published by the Monterey Bay National Marine Sanctuary

***High Priority Projects for Grant Funding***

- Limiting factor analysis of San Francisquito Creek watershed
- Watershed assessments to confirm or reject siltation/sediment listings, and determine whether there are other causes for impairment (e.g., riparian impacts, flow depletion, nutrients)
- Implement initial restoration and management actions in impaired watersheds
- Establish stakeholder forum(s) and watershed management plans to promote proactive problem solving by local entities. Include priority listing of actions needed to resolve watershed disturbances, and initial recommendations for salmonid recovery
- Facilitate multi-agency coordination and consolidation of Endangered Species Act (ESA) and Clean Water Act (CWA) mandates

### **3.8 SANTA CLARA WATERSHED MANAGEMENT AREA (Santa Clara Basin)**

The Santa Clara Basin (Figure 3-7) encompasses the extreme South Bay (south of the Dumbarton Bridge) and those areas of Santa Clara County that drain to the South Bay, including the eastern slope of the Santa Cruz Mountains, the Santa Clara ("Silicon") Valley, and the western slope of the Diablo Range. Within Santa Clara County, the Basin consists of eleven watersheds including the Coyote Creek watershed on the east side of the valley, the Guadalupe River watershed which drains the south-central portion of the valley, the southern half of the San Francisquito Creek watershed on the western boundary of the Basin, a series of small, relatively urbanized watersheds that drain the remainder of the west side of the valley, and the Baylands.

The Basin has a population of approximately 1.7 million, and is mostly urbanized, with some agricultural uses in the rural upper watershed areas. It is one of the fastest growing counties in California.

#### ***Water Quality and Aquatic Beneficial Use Issues***

Wastewater discharges into San Francisco Bay from the Silicon Valley have been an ongoing issue for Board staff. The discharge from the San Jose/Santa Clara wastewater treatment plant goes into historic salt marshes in the South Bay. The discharge has caused conversion of portions of the salt marsh to brackish marsh, which is significant since two endangered species rely on the salt marsh habitat. In response to this the Board has required mitigation for converted habitat and adopted the "South Bay Action Plan" to limit flows from the treatment plant. The Action Plan includes reclamation, conservation, and environmental enhancement projects.

Santa Clara County has more than 700 miles of creeks and rivers (Figure III-7). Agricultural and urban development have encroached into the original floodplains of many reaches of most of these streams. Reduced floodplains in combination with increased runoff from development have increased erosive forces of streams, resulting in increased soil erosion in some locations and increased soil deposition in others. The various types of development have reduced riparian vegetation which historically provided increased channel stability, shading, instream habitat cover, and a food source for aquatic invertebrates. Flood management channel modifications, both concrete and earthen, have, in most instances, eliminated natural floodplains, instream habitat, and riparian vegetative canopy. Urban stormwater runoff has increased the pollutants discharged to the streams. These impacts have not been uniformly distributed throughout all streams. Some reaches of some streams, especially, though not exclusively, in the upper undeveloped areas of the watersheds, have retained sufficient value to sustain fisheries and riparian habitat.

The Basin includes the region's most significant groundwater resource, the Santa Clara Valley. The boundary of the Santa Clara Valley groundwater basin is the contact between valley fill and the bedrock formations at the surface and beneath the fill. The aquifers of the Santa Clara Valley consist of 1) the forebay, 2) upper aquifer zone, and 3) the lower aquifer zone. The Santa Clara Basin receives its major recharge in the forebay from stream infiltration, applied irrigation water,

and percolation ponds. Most of the groundwater pumped from the basin is from the lower aquifer zone. Groundwater supplies approximately 50% of the potable water supply for the residents of the Santa Clara Valley. The other 50 % comes from imported water that is stored in surface reservoirs along with local rainfall and runoff.

Groundwater is extremely important to the Santa Clara Valley and protection of this resource is therefore very important. Industrial and agricultural activities have contributed to the degradation of the groundwater in some parts of the Santa Clara Valley. Pollutants that contaminate shallow groundwater have found their way into the deeper drinking water zones through a combination of leaky aquitards and numerous improperly abandoned wells. Development in the Basin margins has removed large portions of the recharge area from the hydrogeologic regime. This has a two-fold effect on the regions groundwater. First it reduces the amount of surface area available for water to infiltrate into the aquifers and secondly it places potentially polluting activities in the recharge area.

Several water bodies in the Santa Clara Basin have been designated under Section 303(d) of the Clean Water Act as impaired due to certain pollutants. These include South San Francisco Bay for copper, nickel, mercury, selenium, diazinon, polychlorinated biphenols (PCBs), dioxins, furans, dieldrin, chlordane, and DDT. Urban creeks (Calabazas, Coyote, Guadalupe, Los Gatos, Matadero, San Francisquito, Saratoga, and Stevens) have been listed for diazinon. Water bodies in the Guadalupe River watershed (Guadalupe River, Alamitos Creek, Guadalupe Creek, Calero Reservoir, and Guadalupe Reservoir) have been listed for mercury. San Francisquito Creek has been listed for excessive siltation (sediment) These and other possible listings and progress towards their resolution and will be reviewed as part of update of the 303(d) list due April 2002. Resolution of impairment includes development of TMDLs. TMDLs are currently being developed (see Appendix A, Section 8) for copper and nickel in South San Francisco Bay, mercury, and PCBs in San Francisco Bay as a whole, diazinon in urban creeks, mercury in the Guadalupe River watershed, and sediment in San Francisquito Creek.

In response to the many water quality and aquatic beneficial use problems in the county, considerable local effort is underway in addressing a wide range of issues: wastewater disposal and reuse, urban runoff pollutant reduction, wetland fill impact avoidance and mitigation, watershed assessment and action planning, TMDL development, ecologically-sensitive flood management project design, and development of comprehensive multi-year water quality and watershed health monitoring.

### ***Santa Clara Basin Watershed Management Initiative***

We initiated our watershed management effort in the Santa Clara Basin in the summer of 1996 with a series of stakeholder focus group meetings at which we solicited stakeholders' interests relative to watershed management in the Basin. The community embraced this opportunity to accept responsibility for local stewardship of the watershed and created the Santa Clara Basin Watershed Management Initiative (WMI). This WMI is a broad-based stakeholder group of 32 signatories from local, state and federal public agencies, business and trade associations, and civic and environmental groups and programs. The declared purpose of the WMI is " to develop and implement a comprehensive watershed management program - one that recognizes that

healthy watersheds mean addressing water quality problems and quality of life issues for the people, animals and plants that live in the watershed." The WMI has established a mission statement, goals, planning objectives for development of the watershed plan, implementation objectives, and a framework for conducting a watershed assessment. Also, stakeholder forums for development of TMDLs have been established for copper and nickel in Lower South San Francisco Bay, mercury in the Guadalupe River watershed, and sediment in San Francisquito Creek.

The WMI is committed to implement a watershed management planning process for the Santa Clara Basin that integrates the following issues:

- habitat and water quality protection and enhancement;
- water rights and water supply reliability;
- flood management;
- regulatory compliance;
- land use; and
- public awareness and involvement.

The Workplan for the WMI includes preparation of 3 volumes: (1) Watershed Characteristics, (2) Watershed Assessment, and (3) Watershed Action Plan. The Watershed Characteristics Report was published in February 2001. The Watershed Assessment for 3 pilot watersheds is anticipated in draft in February 2002. The Watershed Action Plan is completing preliminary planning early in 2002 and is expected to be completed in December 2002. The Watershed Plan will be based on sound science with broad stakeholder involvement and will integrate existing programs and identify what needs to be done to reduce and prevent pollution and provide for effective land use and waterway management. The comprehensive stakeholder process will be used to reach agreement on the Plan, its priorities and long term implementation.

We are promoting the following eleven actions as desired outcomes of watershed management efforts:

1. Implementation of a comprehensive watershed assessment strategy that identifies problems or otherwise establishes steps to resolve unknowns;
2. Implementation of a comprehensive watershed assessment strategy that identifies sources of problems or otherwise establishes steps to resolve unknowns;
3. Implementation of a comprehensive watershed assessment strategy that identifies solutions of problems or otherwise establishes steps to resolve unknowns;
4. Long-term resolution of municipal wastewater permit issues;
5. Long-term resolution of San Jose/Santa Clara wastewater discharge flow cap issues;
6. Resolution of urban runoff (municipal stormwater) permit issues;
7. Establishment of basis for Basin Plan Amendments (includes consideration of site specific objectives);
8. Assessment and resolution of 303(d) impaired water body listings and development of a phased TMDL (initial priorities are copper and nickel in South San Francisco Bay, mercury in the Guadalupe River and sediment in San Francisquito Creek);
9. Establishment of a streamlined 404 permit/401 certification process for stream and wetlands fill and dredging projects;

10. Implementation of the Urban Runoff Permit stormwater treatment and hydrograph modification requirements for new development and redevelopment projects; and
11. Development/implementation of a Stream Protection Program to prevent further degradation of stream habitats and associated non-support of aquatic habitat beneficial uses.

The first ten of these outcomes were identified by Regional Board staff in 1997. The tenth outcome has been modified slightly to reflect the current status of the Urban Runoff Permit provisions. The eleventh outcome has been added to reflect the emerging focus on stream functions in relation to beneficial use protection.

To date, the most outstanding successes of the WMI have been in sustaining organizational continuity and in the conducting outreach and information dissemination. After five years, the organization still continues to meet, resolve issues and produce products. Staff and volunteers of key agencies and signatory organizations continue to provide input to the WMI coordinating body and its subgroups. The outreach products have been numerous and well implemented, e.g., the WMI Vision Brochure, the Watershed Watch Media Campaign, publication of the Watershed Characteristics Report, funding of a lecture series, Santa Clara Valley Water District Landuse Summit, and watershed grants to community organizations by the Water District and City of San Jose.

The success of its watershed assessment process has been more limited. The WMI's three watershed assessments (Guadalupe, Upper Penetencia and San Francisquito), due in draft in early to mid-2002, are being prepared with existing data (rather than a result of a substantial field data collection effort), thereby initially limiting their usefulness. Nevertheless, the assessments may be useful for identifying, and creating a plan to fill, data gaps.

An important current focus of the SCB WMI is the completion of a Watershed Action Plan, targeted for December 2002. This Plan will consist of recommended actions and implementation tasks compiled from input from the various WMI subgroups.

More significant progress is being made by individual WMI member agencies rather than directly through the WMI itself. The Santa Clara Valley Water District's \$8 million 1.8 mile Guadalupe Creek Restoration project is nearing completion. Settlement of a water rights complaint in 2002 is expected to result in the Water District making commitments to significant improvements to fisheries habitat on three stream systems. The San Francisquito Creek sediment analysis under the direction of a Joint Powers Authority is moving forward. The Water District has secured legislative approval to include stream stewardship in its mission and is reorganizing and expanding its staffing to accommodate a watershed stewardship program, including improved monitoring and further development of ecologically-sensitive flood management project design approaches. The WMI has the potential to continue to build upon these individual efforts and create a coordinated effort to implement its well articulated watershed vision.

In 2001, the WMI conducted its own self-evaluation of its performance relative to Regional Board goals and to its own internal goals and objectives and has prepared a list of its

accomplishments (see its self-assessment and accomplishments contained in Appendix B). These self-evaluations reflect the depth of commitment and the seriousness of WMI participants in crafting an effective watershed management program. One aspect emphasized in these documents is the important progress in building institutional relationships which we see as laying the essential groundwork for more substantial watershed planning and improvement actions. Though these groundwork laying activities over the past five years are to be commended, it is hoped that the coming years will see a move towards the completion of more substantial watershed planning and project implementation. It is hoped that the assessments, in conjunction with current discussions shaping a five year monitoring program for the basin, will result in a data collection effort that contributes more to action planning and implementation.

The WMI is at a critical juncture in its history. It can take the assessments and lessons learned to date and step up towards the next level of commitment to robust watershed assessment and project implementation. Or it can choose to continue at groundwork laying stage and produce reports which point in the right direction but delay the hard decisions of resource commitment needed to make the WMI fully realize the purpose for which it was created. The coming two years will be pivotal in the WMI's history.

During this fiscal year, the Regional Board staff will prepare an analysis of the effectiveness of the SCB WMI process. The analysis will include "lessons learned" and the implications of these "lessons learned" for the future of the WMI and for beginning similar initiatives in other counties of the region. The analysis will also be used in dialogue with the SCB WMI and member agencies towards the end of identifying barriers to WMI effectiveness and strategies to overcome them.

### ***Regulatory Framework***

The Board's major regulatory program thrusts in the county include:

- NPDES Permits for discharges to surface water from 3 major wastewater treatment plants
- NPDES Urban Runoff Program (consolidated permit for 13 municipalities, the County and the Santa Clara Valley Water District)
- 401 Certifications and Waste Discharge Requirements for major flood management capital projects and channel maintenance projects
- 401 Certifications for other wetland/stream fill projects
- Waste Discharge Requirements for Landfills and other waste-disposal-to-land facilities
- Site Cleanup Requirements and NPDES Permits for groundwater cleanup sites
- TMDL Development, including Guadalupe River Mercury TMDL and San Francisquito Creek Sediment TMDL
- Monitoring efforts through the Regional Monitoring Program, Surface Water Ambient Monitoring Program, and Regional Monitoring and Assessment Strategy

The local Watershed Management Initiative efforts are currently without an explicit regulatory permit driver; hence, the WMI priorities tend to be driven by other programs, such as the Urban Runoff Program requirements, conditions placed on wetland fill certifications, requirements of



federal and state fisheries agencies, citizen advocacy group legal actions, or internal institutional needs.

One of the major participants in watershed management activities in the basin is the Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP). The Regional Board first issued an NPDES municipal storm water permit to the SCVURPPP in 1990, and reissued the permit in 1995 and 2001. The permit and the SCVURPPP seek to reduce urban runoff pollution through such programs as illicit connection and illegal dumping elimination; industrial and commercial discharge control; maintenance of streets, storm drains, and water utilities; pollutant specific control activities (e.g. pesticides, mercury, PCBs); new development planning procedures; construction inspection; comprehensive monitoring, and public information and participation.

### ***Significant Issues***

#### **Urban Runoff**

- Lack of permanent stormwater treatment and hydrograph modification management at new development/redevelopment projects
- Operation and maintenance of new development stormwater treatment measures
- Lack of comprehensive water quality monitoring program
- Erosion during construction of new development projects
- Pollution from diazinon and other urban pesticides
- Insufficient inspection/enforcement follow-up actions for industrial and illicit discharges

#### **Channelization/Stream Maintenance/Flood Management**

- Identification of sources, causes and solutions to significant sediment problems
- Continued improved stream maintenance practices and associated land use practices
- Habitat loss and sedimentation from ongoing flood management projects
- Need for new pilot programs to test innovative ecologically-sensitive multi-objective flood management design approaches

#### **Stream and Wetland Habitat Protection**

- Wetland losses at new developments
- Protection and enhancement of riparian buffers
- Improved process for stream alteration and wetland fill permits
- Protection of endangered species
- Restoration of bayland wetlands
- Lack of comprehensive local programs, policies and implementing ordinances for protecting stream habitats from further degradation

#### **Pollutants**

- Implementation of pollution prevention action plans and site specific objectives for copper and nickel
- Hg impairment in SF Bay and upland watersheds from natural sources and abandoned mines
- Resolution of potential sediment impairment
- Lack of watershed data for Guadalupe Hg and San Francisco Bay PCBs TMDL
- Lack of watershed data for dioxins and pesticides

- Lack of watershed data for potential listings (e.g., sediment, trash) and emerging issues (e.g., polydibromated ethers, endocrine disrupting substances, pharmaceutically active substances)
- Toxicity from pesticides
- MTBE, industrial solvents, and gasoline contamination in groundwater

#### Wastewater Discharges and Reclamation

- Reclaimed wastewater for environmental enhancement
- Mandatory enforcement activities under SB2165

#### Groundwater Protection

- Protection of high quality groundwater resources and cleanup of polluted groundwater
- New development in groundwater recharge zones
- Wellhead protection plans
- Potential reclamation in recharge areas

#### Issues from the Santa Clara Basin Watershed Management Initiative

- Regulatory streamlining
- Efficiency of the Regional Board
- Ongoing resources and funding for the WMI
- Sustainable water supply in light of explosive growth
- Better coordination of air quality and transportation regulation

#### ***Proposed Workplan for FY 2004/05 and 2005/06***

##### Urban Runoff

- Oversee implementation of Santa Clara Valley Urban Runoff Pollution Prevention Program Permit
- Gain stormwater program improvements through thorough review of annual reports
- Implement effective monitoring program
- Assure compliance with new development/redevelopment provisions
- Implement pollutant-specific provisions (e.g., pesticides, mercury, PCBs)
- Improve followup aspects of industrial inspection program

##### Stream and Wetland Habitat Protection

- Review potential significant impacts prior to taking 401 certification/WDR action for: Upper Guadalupe River, Lower Silver Creek, Adobe Creek, Matadero Creek, Lower Guadalupe, Upper Penitencia Creek
- Collaborate with eight other organizations to develop integrated solutions for flood protection, habitat restoration, and community recreation on the Upper and Lower Guadalupe River
- Track implementation of comprehensive, long-term stream maintenance plans for Alum Rock Park (Upper Penitencia Creek)
- Oversee Santa Clara Valley Water District's sediment removal projects
- Review of Santa Clara Valley Water District design details for bank stabilization, outfall, cribwall, and bank grading projects
- Develop strategy to streamline processing of both WDRs and 401/404 certifications
- Review 310 acre salt pond conversion mitigation bank project and Los Capitancillos freshwater marsh mitigation project

- Take action on 401/404 certifications

#### Impacts from Pollutants

- Oversee NPDES Permit including: review annual report, conduct annual audit, and assist with runoff issues associated with construction and new development
- Oversee copper/nickel amended permit compliance
- Initiate Basin Plan Amendment process for Cu/Ni
- Leadership role in WMI workgroup for Hg TMDL in Guadalupe Watershed

#### Program Implementation by RWQCB staff

- Continue in leadership roles in the Watershed Management Initiative
- Prepare evaluation of current effectiveness of the WMI, recommendations for improving the WMI effectiveness and lessons learned for application in other counties
- Develop strategy to implement a comprehensive Stream Protection Program
- Take enforcement actions as needed
- More effective leveraging and oversight of grants

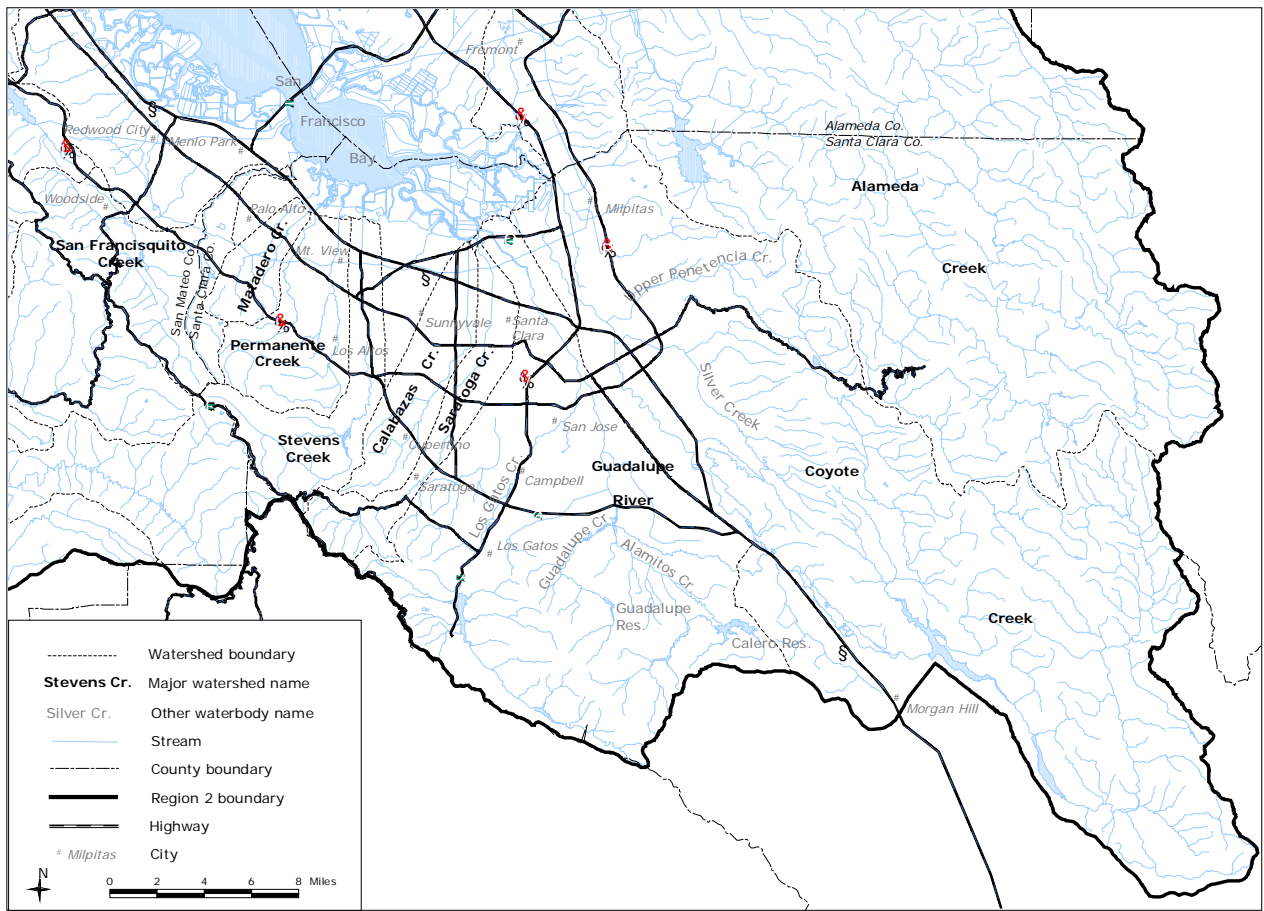
#### High Priority Unfunded Activities

- Review of CEQA submittals

#### ***High Priority Projects for Grant Funding***

- Watershed assessments to confirm or reject mercury and siltation/sediment listings, and determine whether there are other causes for impairment (e.g., riparian impacts, flow depletion, nutrients).
- Implement initial restoration and management actions in impaired watersheds.
- Support for the development of citizen monitoring efforts to characterize watershed health and identify pollutant sources
- Support for the development of public/private partnerships in watershed monitoring
- Pilot project for attaining beneficial uses in modified stream reaches (including Santa Clara Basin-wide identification and ranking of modified stream reaches with high potential for restoration of more physically and biologically natural channels.)

**Figure 3-7. Santa Clara County Watersheds**



### **3.9 SOLANO WATERSHED MANAGEMENT AREA**

Solano County is the northernmost of the nine counties within the San Francisco Bay Area. The county's population of 394,500 (2000 census) is concentrated along the Interstate 80 corridor that runs generally in an east-west direction through the center of the county. Of the county's 823 square mile area, a large percentage is in agriculture, although, as with most outlying Bay Area counties, suburban development is causing a rapid decrease in farmland acreage. The landscape of Solano County ranges from flat agricultural land in the north to rolling hills in the south. Along its southern and western borders are San Pablo and Suisun Bays, the Napa River and the Mare Island and Carquinez Straits. The Sacramento River is the eastern boundary of the county. Region 2's jurisdiction in the county comprises the area that drains into San Francisco Bay and the Carquinez Straits, generally the southwestern half of the county. Figure 3-4 shows significant watersheds in the North Bay including Solano County.

Solano County has become a leader in Bay Area growth since the 1980s because it possesses some of the last remaining large tracts of easily developable land in the Bay Area. The major cities in our portion of the county are Vallejo and Benicia at its southern most end, and Fairfield and Suisun City in central Solano county. Vallejo is the largest city in the county with a population of 116,760 (2000 census). Fairfield is the County seat and second largest city, characterized by a maturing center and new development at the fringes, surrounded by crop and grazing land.

The western portion of Solano County is characterized by the large expanses of wetlands composed of marshes, farmed wetlands, islands, sloughs and mudflats forming a crescent along the north shoreline of San Pablo Bay. This crescent is anchored by Mare Island at its eastern most point. The former Mare Island Naval Shipyard consists of over 5,000 acres of developed areas, marshlands, and submerged lands. Environmental concerns at the facility include: landfills, underground storage tanks, oil sumps, PCBs, industrial solvents, sandblasting waste, and ordnance.

The Suisun Marsh, a vast expanse of dikes and vegetated wetlands, marshes, sloughs, islands and mudflats, characterizes a large portion of the eastern part of Solano County. The extensive 10,000 acre open space tract of the Tri-City and County Cooperative Plan forms the upland area to the Suisun Marsh. Travis Air Force Base, which occupies over 6,000 acres in eastern Solano County, is an active military base, and employs a large portion of the county residents.

#### ***Significant Water Quality Issues and Areas of Interest***

- Upland erosion and downstream sedimentation in Suisun Marsh and tributaries.
- Stormwater runoff (new development, pesticides, nutrients)
- Conversion of agricultural land to vineyards
- Protection of endangered species habitat, wetlands and riparian
- Mare Island Base conversion, redevelopment, and environmental cleanup
- Suisun Marsh Wetlands designated as impaired on 303(d) list, due to metals, nutrients, organic enrichment, low D.O. and salinity; medium priority TMDL

- Redevelopment in and near downtown Vallejo (Brownfields), including cleanup and redevelopment of a former PG&E manufactured gas facility across the Strait from Mare Island and other pending development of waterfront industrial properties.
- Underground aqueduct running through Fairfield that is posing a concern to the UST Local Oversight Program
- Travis AFB Superfund site and environmental cleanup.

***Proposed Workplan for FY 2004/05 and 2005/06***

- Reissue NPDES permit for Vallejo Sanitation Agency
- Oversee DoD site cleanups, including Mare Island, Benicia Arsenal, and Travis AFB
- Oversee SLIC and UST sites
- Oversee storm water programs; reissue Vallejo Stormwater Permit under Phase II general permit
- Issue approximately water quality certifications
- Oversee wetland restoration projects, including Montezuma Slough
- Review and address Bay margin issues, including pipeline repairs, nutrient discharges from duck clubs
- Take enforcement action as needed

***High Priority Unfunded Activities***

- CEQA review
- Grant management
- Construction project oversight
- General plan reviews and new development project reviews

***High Priority Projects for Grant Funding***

- Implementation of management practices to reduce sediment discharges to Suisun Marsh
- Habitat restoration in Suisun Marsh and creeks
- Watershed planning efforts

### **3.10 SONOMA WATERSHED MANAGEMENT AREA**

Region 2 includes the portion of Sonoma County south of the city of Santa Rosa, which contains the drainage basins of the Petaluma River, Sonoma Creek, and Tolay Creek. The northern portion of Sonoma County is located in the North Coast Regional Board's (Region 1) jurisdiction. Figure 3-4 shows significant watersheds in the North Bay, including Sonoma County. These water bodies drain into tidal flats adjoining the north end of San Pablo Bay. The cities of Petaluma and Sonoma are within this management area. Sonoma County is one of the fastest growing counties in California. This growth is resulting in land use changes and associated environmental and water quality issues.

These watersheds support an array of land uses such as vineyards, livestock facilities, croplands, state parks and urban areas. The western part of southern Sonoma County is generally low, rolling hills. Reclaimed San Pablo tidal flats form the lower ends of the two valleys. The valley floors and adjacent hills are farmed intensively. The hills in southwestern Sonoma County are used largely for grazing dairy cattle and sheep.

The Petaluma River and its tributaries drain a total area of about 146 square miles and are situated in both Sonoma and Marin counties. The Petaluma watershed has a diverse range of habitats from redwood and fir forests in the headwaters to chaparral, oak woodland, and bayland areas. In Sonoma County, the Petaluma River receives water flowing out from the hills surrounding the city of Petaluma, which is located in one of two long narrow valleys in the southern part of the county. The city of Petaluma has a population of 54,548 (2000 census) and has a 4.8 mgd wet weather discharge to the Petaluma River. The Petaluma wastewater treatment plant is approaching its discharge capacity and is currently planning an expansion of the plant.

Sonoma Creek drains a 170 square mile area from the Sonoma and Mayacamas Mountains into the Valley. The City of Sonoma is located in the central portion of the valley. The headwaters of Sonoma Creek are located in the upland areas of Sugarloaf Ridge State Park. Sonoma Creek and its tributaries drain onto Sonoma Valley, an area dominated by hillside and valley vineyards. The lower portion of Sonoma creek is tidally influenced and low-lying areas support hay farming, wetlands, and other uses. The City of Sonoma, the largest city in the watershed, has a population of 9,128, and the Sonoma County Water Agency operates a 3 mgd wastewater treatment plant that discharges to Schell Slough from December through April and reclaims water in the summer.

Tolay Creek drains about 10.9 square miles. There are no major tributaries, but there are springs and seasonal drainage ways in the watershed. The Sears Point Raceway is located within the Tolay Creek watershed.

The Sonoma Creek and Petaluma River watersheds support beneficial uses for cold and warm freshwater habitat, fish migration, and preservation of rare and endangered species, fish spawning, wildlife habitat, and contact and non-contract recreation. In addition, groundwater is a source of drinking and irrigation water in rural areas of the county. Impacts from agriculture runoff, construction, hillside development, and urban runoff have resulted in the 303(d) listing of Sonoma Creek and Petaluma River for nutrients, pathogens, and sediment.

The lack of up-to-date water quality and watershed information poses the most significant obstacle to developing a meaningful and effective TMDL for nutrients, pathogens, and sediment in both the Sonoma Creek and Petaluma River watersheds. It is suspected that nutrient loading is causing exceedences of the water quality objectives for toxicity, biostimulatory substances, un-ionized ammonia, dissolved oxygen, and total dissolved solids in some waterways. Staff also believe that the standards for total and fecal coliform are not being achieved in some parts of the watersheds. Preliminary sediment evaluation work has been completed in both watersheds; however, a broader watershed study has not been undertaken.

Watershed management efforts are underway in Sonoma Creek and Petaluma River watersheds. The Sonoma Conservancy has been established as a consortium of stakeholders led by the Sonoma Ecology Center and the Southern Sonoma Resource Conservation District. The RCD has completed the “Sonoma Creek Watershed Enhancement Plan” and the “Sonoma Creek Habitat Inventory.” The TMDL stakeholder forum has been established and a project management plan has been prepared. In the Petaluma River watershed, CALFED funds were awarded to the San Francisco Estuary Institute for monitoring and restoration work. The RCD has also completed a “Petaluma River Watershed Enhancement Plan.”

### ***Significant Watershed Issues***

#### ***Petaluma River***

- High levels of metals at the Regional Monitoring Program Station at the mouth of the Petaluma River; need to resolve whether the Petaluma River is a source of the metals
- Nutrient problems documented by CDFG need urgent actions including source identification, more frequent inspections of confined animal facilities (dairy, horse boarding, livestock producers) to evaluate compliance with State minimum standards, issue requests for corrective action and ROWD (conservation ranch plans with nutrient budgets), and associated follow-up actions, including inspections, permit issuance, report review and enforcement as appropriate.
- Sedimentation problems in tributaries associated with new development, gullying and agricultural land use practices necessitate staff involvement with BMP outreach programs, management of watershed enhancement grant contracts, watershed monitoring and assessment, and TMDL development
- Baseline watershed assessment targeting 303(d) impairment listing is needed, including coordination with stakeholder groups collecting water quality monitoring and watershed assessment data to update the 303(d) list and support TMDL development
- County-wide baseline stormwater management program needs Tier 2/Tier 3 level encouragement
- Water quality and habitat impacts due to waterway maintenance and improvements
- Wastewater treatment plant reconstruction forthcoming
- Implementation of Nonpoint Source Program Management Measures: Erosion and Sediment Control; Confined Animal Facilities; Grazing Management; Education/Outreach; Urban Areas; and Hydromodification

#### ***Sonoma Creek***

- Sedimentation, nutrient and pathogen impacts require baseline watershed assessment targeting 303(d) listing and TMDL development



- Expansion of wineries and resultant wastewater management issues
- Development of hillside vineyards and associated erosion and runoff
- Increasing water diversions to support increasing vineyard acreage may be affecting stream habitat and anadromous fish survival rate.
- Need to review Sonoma County on-site septic program, participate in quarterly meetings with the County, review proposals for large projects ( $\geq 1500$  gal/day) and projects requesting variances to siting requirements, respond to public concerns, issue permits and enforce as necessary
- County-wide baseline stormwater management program needs Tier 2/Tier 3 encouragement
- Wastewater treatment plant capacity deficiencies
- Waterway maintenance and capacity “improvements”
- Implementation of Nonpoint Source Program Management Measures:
- Erosion and Sediment Control; Grazing Management; Education/Outreach; Forestry; Urban Areas; and Hydromodification
- County approval of a grading ordinance

#### *Tolay Creek*

- Sears Point Raceway expansion requiring project review, permitting and follow-up
- Animal waste management
- Recurrent flooding of homes and domestic septic systems in lower Tolay Creek requires urgent corrective action
- Implementation of Nonpoint Source Program Management Measures: Erosion and Sediment Control; Confined Animal Facilities; Grazing Management; Education and Outreach; and Hydromodification

#### ***Proposed Workplan for FY 2004/05 and 2005/06***

- Conduct Sonoma Valley and Petaluma NPDES inspections
- Implement Phase II stormwater runoff permit program
- Complete inspections of 30 confined animal facilities
- Take action on 401/404 certifications
- Resolve outstanding issue with major NPDES permits
- Take enforcement action as necessary
- Manage 319(h) grant contracts for both the Sonoma Creek and Petaluma River Watersheds
- Review the Sonoma County on-site septic program, participate in quarterly meetings with the County, review projects requesting variances to siting requirements, respond to public concerns, and enforce as necessary
- Develop TMDLs, including stakeholder outreach, water quality monitoring and watershed assessment, coordination with volunteer monitoring activities
- Work with the countywide baseline stormwater program to address impacts due to waterway maintenance and improvements
- Reissue NPDES and Waste Discharge Permits

### ***High Priority Unfunded Activities***

- Water quality and biological monitoring, and watershed assessment activities to facilitate development and implementation of TMDL workplans for sediment, nutrients, or pathogens, including coordination of existing monitoring and assessment efforts
- Need to review the Sonoma County on-site septic program, participate in quarterly meetings with the County, review projects requesting variances to siting requirements, respond to public concerns, and enforce as necessary
- CEQA review

### ***High Priority Projects for Grant Funding***

- Sonoma Creek: Sediment budget analysis to identify sources of sediment, impacts to aquatic life, and improved sediment management practices.
- Petaluma River: expansion of the Watershed Enhancement Plan, implementation of BMP demonstration projects, development of conservation ranch plans and nutrient budgets for confined animal facilities, water quality and biological monitoring, and watershed assessment activities to facilitate development and implementation of TMDL workplans for sediment, nutrients, or pathogens

### 3.11 TOTAL MAXIMUM DAILY LOAD (TMDL) PROGRAM

The Clean Water Act requires states to identify impaired waterbodies and the pollutants causing the impairment and to establish the Total Maximum Daily Load (TMDL) of the pollutant to the waterbody necessary to eliminate the impairment. The state must also identify pollutant sources and allocate the allowable pollutant load to the sources. An implementation plan must also be established. The complete TMDL including allocations and implementation plan must be incorporated into the Basin Plan.

A complete TMDL includes the following specific elements:

- *Problem Statement:*  
Description of which standards are not being attained, which beneficial uses are impaired and the nature of the impairment.
- *Numeric Targets: The Desired Future Condition:*  
Measurements that will describe protection of the beneficial uses that are impaired, and attainment of standards. They should provide a basis to assess progress towards, or attainment of standards. Numeric targets may be existing, new, or site-specific numeric water quality objectives. Alternatively they may be a quantitative measure that is a surrogate for a narrative water quality objective or a surrogate for a numeric water quality objective that provides a better basis to link sources to the impairment.
- *Source Analysis:*  
Amount, timing, and point of origin of pollutants of concern.
- *Linkage Analysis:*  
Description of the relationship between numeric target(s) and sources and estimation of the assimilative (loading) capacity of the water body for the pollutant. The loading capacity is the quantitative link between the applicable water quality standard (as interpreted through numeric targets) and the TMDL.
- *TMDL and Allocations:*  
The TMDL may be all or part of the loading capacity. The TMDL is then allocated amongst point, nonpoint, and background sources. Allocations may be specific to agencies or persons (businesses) or generally by source category or sector.
- *Margin of Safety:*  
A margin of safety must be incorporated into the TMDL. The margin of safety may be implicit (using conservative assumptions) or explicit (a discrete allocation assigned to the margin of safety).
- *Implementation Plan:*  
Actions, responsible parties, and schedules necessary to alleviate the impairment and meet the allowable TMDL and allocations. Identifies enforceable features (e.g. prohibition), and triggers for Regional Board action (e.g. performance standards). May be part of a watershed management plan.
- *Monitoring / Revaluation:*  
Monitoring strategy to track implementation of actions and elimination of impairment, and, if necessary, consideration of TMDL revisions.

Our strategy is to approach each TMDL from the perspective that solution of the water quality problem is the goal not the TMDL itself. As such, we will evaluate the need and benefit of tasks in each of the complete TMDL elements and focus resources on tasks most critical to the

ultimate solution. For example, problem definition would be a high priority for waterbodies that may be listed as impaired based on limited, outdated or poor quality data. Source analysis may be the critical gap for other TMDLs. Consideration of implementation alternatives, enforcement mechanisms, and watershed management will be critical for TMDLs that have nonpoint sources as the primary source of the water quality impairment.

TMDL projects and schedules for the San Francisco Bay Region are available on the Regional Board website at [www.swrcb.ca.gov/rwqcb2/tmdlmain.htm](http://www.swrcb.ca.gov/rwqcb2/tmdlmain.htm). The website also describes the TMDL process and TMDL reports completed to date.

The WMI provides an operative framework to meet the challenges associated with the development and implementation of TMDLs for pollutants causing impairment of waters. A complete TMDL encompasses many tasks and activities directly or indirectly associated with watershed/waterbody characterization, assessment, and management and other programs (e.g., NPDES, Nonpoint Source Program, Monitoring and Assessment, and Basin Planning). Consequently, TMDL development and implementation must be closely coordinated with watershed and program tasks on both the regionwide and county watershed management area levels. Accordingly, TMDL related issues and tasks are appropriately noted in other sections of this Chapter.

Stakeholder participation and support will be essential for all TMDL projects. We continually identify and create opportunities to enhance involvement and collaboration with stakeholders. These efforts include improved outreach and communication associated and improved descriptions and use of stakeholder involvement and collaboration opportunities and mechanisms. Integral to this effort will be the recognition that stakeholders may bring information and expertise to the table. For each TMDL project, we will strive for the most focused and efficient process that allows all stakeholders to effectively participate and ensures balanced representation on any recognized “watershed” or stakeholder forum. Mechanisms will range from compilation and maintenance of interested parties lists to formally recognized and facilitated stakeholder forums. Other state and federal agencies are key stakeholders in the development and implementation of TMDLs. Our TMDL efforts overlap authorities and programs of other agencies. Certain TMDLs are dependent on efforts by these other agencies (e.g., pesticide TMDLs and the USEPA and DPR). In some cases, actions by other agencies may even conflict with or create barriers to TMDL efforts. We will seek opportunities to enhance coordination and collaboration with other agencies, and overlaps, conflicts, and barriers will be identified and appropriate resolutions, agreements, etc. will be pursued.

There are a number of significant challenges that do not have easy resolution that we must overcome to succeed. San Francisco Bay is an estuary with complex hydrodynamics and sediment and biochemical fate and transport processes, and there are significant limitations to existing quantitative fate and transport models. A number of water quality problems are due to chemicals that are no longer in use and have no known active discharges (e.g., DDT). Others are due to sources beyond the jurisdiction of the Regional Board (e.g., mercury, pesticides). A number of waterbodies are impaired due to excessive siltation, but it is very difficult to distinguish between natural and human caused sources of sediment, and to distinguish between excessive siltation and impairment due to flow alterations. These challenges and the potential

high costs associated with their resolution provide further cause to work within the Watershed Management Initiative to set priorities and identify cost-effective tasks to establish and attain TMDLs through integration with other efforts and collaboration with stakeholders.

As previously noted, the WMI provides the operative framework for allocation of these resources and identification of priorities and additional resource needs. We have regionwide project and program management resource needs in addition to specific TMDL project resource needs. These include management of the TMDL program (roundtable participation, preparation of workplans and reports, program development and budget planning, outreach and education, participation in workshops and other forums) and development of a regionwide sediment TMDL strategy.

Numerous water bodies in the San Francisco Bay Region are listed as impaired due to excessive siltation or sedimentation. Consequently, sediment TMDLs including implementation plans are required to remedy the impairments. A regional approach to this challenge (versus one watershed at a time) provides economies of scale in terms of both resources and time. The regional approach is founded on the premise that subwatershed areas with common attributes that influence sediment input (geology, vegetation, land use, and topography) can be defined and characterized. Characterization and assessment of representative subwatershed areas will provide reference states, a quantitative understanding of sediment production and its relationship to habitat quality, and a basis for distinguishing sediment associated with natural processes from sediment from land-use activities. A key first step in this strategy is the compilation of data relevant to the findings of impairment in the listed water bodies.

We are fortunate to have dedicated resources for TMDL development. We have 8.7 PYs for TMDLs (2.5 from federal funds provided by the USEPA and 6.2 from state general funds) and \$228,000 in contract funds. Eight of these positions are included in one TMDL Unit that promotes a team approach and provides a focal point for TMDL activities in the Region. In addition to the TMDL Unit, we coordinate and integrate actions and activities of our Planning and Policy Division and Watershed Management and NPDES Divisions. Improved coordination and integration among these areas and other functions of the Regional Board are a high priority.